

PRICE \$1.00

MAY, 1958

Construction Methods AND EQUIPMENT

A MCGRAW-HILL PUBLICATION

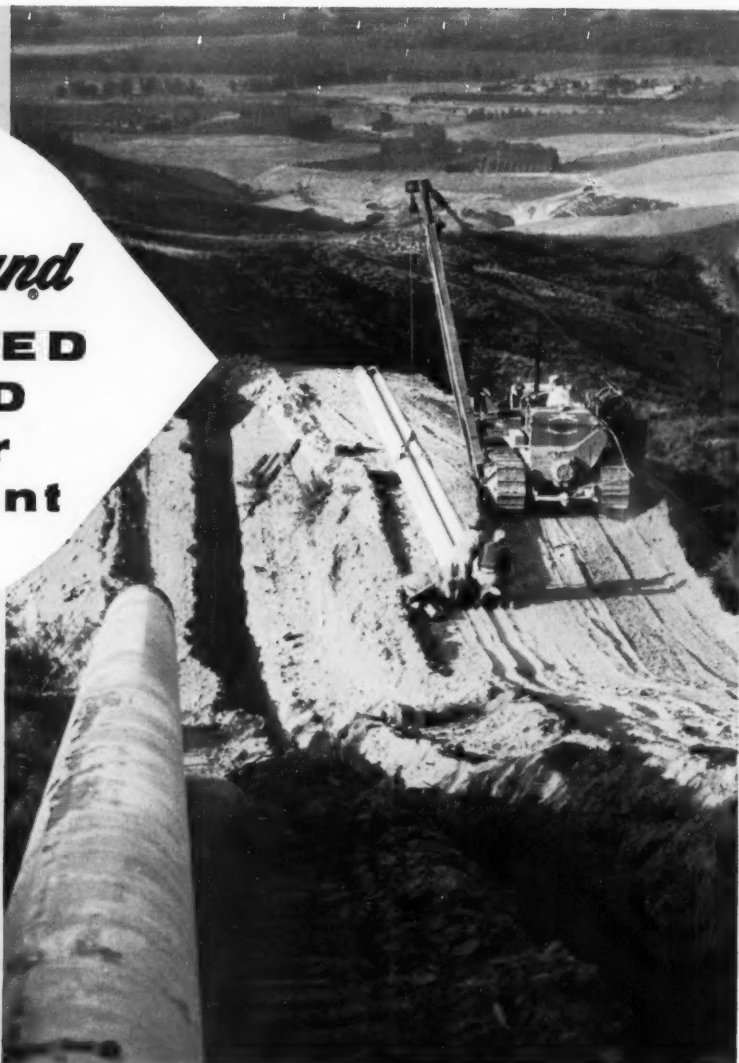


In Maryland, a multi-purpose hydraulic machine handles a bucket to pour concrete for a bridge abutment on a Montgomery County road, after an unusual flood had washed out the original span.

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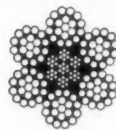
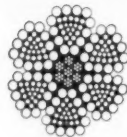
Yellow Strand
FLATTENED
STRAND
on your
equipment

***-is money
in your
pocket!***



Yellow Strand Flattened Strand Wire Rope on your pipelayers, shovels, bulldozers and ditchers *does* put money in your pocket! *Here's Savings No. 1:* Yellow Strand Flattened Strand lasts *twice* — or more — as long as ordinary rope and gives you 10% greater strength. *Savings No. 2:* fewer breakdowns, you make fewer rope changes. You measure the difference in dollars in your pocket! Your Broderick & Bascom Distributor will be glad to tell you more about this better wearing, longer lasting product — as well as the many other B & B products. See him soon! Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.

Here's a difference you can see:



Compare Yellow Strand Flattened Strand (left) with ordinary wire rope (right). Note that Flattened Strand gives you 12 contact points, with consequent greater bearing area and smoother surface. As a result, both rope and sheaves give longer service, lower final cost.

Yellow Strand
Wire Rope





Punching a 3-mile hole through a granite mountain

B.F. Goodrich improvements in rubber brought extra savings

Problem: That picture was taken inside a mountain where men and machines are digging a tunnel for a power project. As fast as the sharp, jagged rocks—some of them boulders six feet wide—are blasted out, they're dumped on a conveyor belt and carried to mine cars. But the constant smash of heavy rock soon pounded the conveyor belt to death.

What was done: The project engineer chose a B.F. Goodrich Nyfil cord mucker belt to replace the ruined belt. This belt is designed to stand heavy impact. Nyfil fabric, made of chemically produced fiber, at the center of the belt

gives it strength without extra weight. Cords running lengthwise at top and bottom of belt are surrounded by rubber. There are no cross threads binding them together, so they are free to give on impact, with rubber taking the shock.

For extra protection against impact, B.F. Goodrich used its patented *Trans-cord breaker*, an extra layer of parallel cords in rubber placed across the belt width and around the edges. It increases adhesion of cover to carcass by 50%, and prevents gouges and cuts from splitting the belt cover, keeps cover from tearing away from carcass

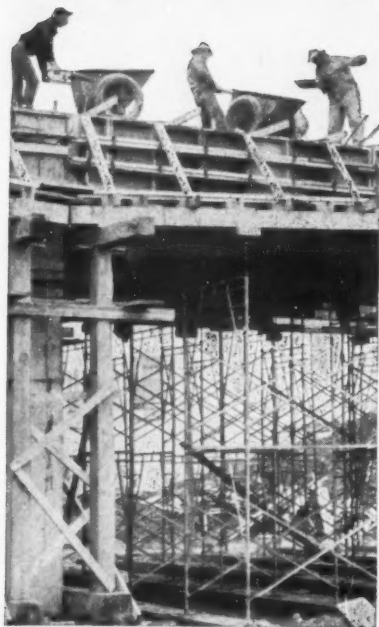
of the belt under severe impact.

Savings: The B.F. Goodrich belt has lasted six months, is still going strong. While it cost nearly half again as much as the belt it replaced, the contractor says it's already paid off by giving twice the service, without costly shut-downs for repairs.

Where to buy: Your B.F. Goodrich distributor has full information on the conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about *all* the rubber products B.F. Goodrich makes for industry. B.F. Goodrich Industrial Products Company, Department M-328, Akron 18, Ohio.

B.F. Goodrich *industrial products*

Bridge Forming

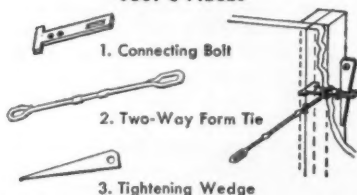


Symons Forms Cut 100 Days Off Bridge Forming Job Ease of Erecting and Stripping Reduces Pouring Time

Contractor Lee Hoffman, Beaverton, Oregon, was given 320 days to pour 4,000 cubic yards of concrete for a bridge over Myrtle Creek in Oregon. Job was complete in 220 days or only $\frac{2}{3}$ the time allotted.

Harry Pajutte, Chief Engineer for Hoffman, credits the ease of erecting and stripping Symons Standard High Strength Forms with contributing substantially to cutting pouring time, reducing number of men required on job, and providing greater mobility for the pouring equipment. Only

JUST 3 PIECES



3,144 square feet of panels were required for the 160,000 square feet of forming.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Facts on Symons products and engineering service available upon request.



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4255 Diversey Avenue, Dept. E-8
Chicago 39, Illinois

Construction Methods AND EQUIPMENT

MAY, 1958

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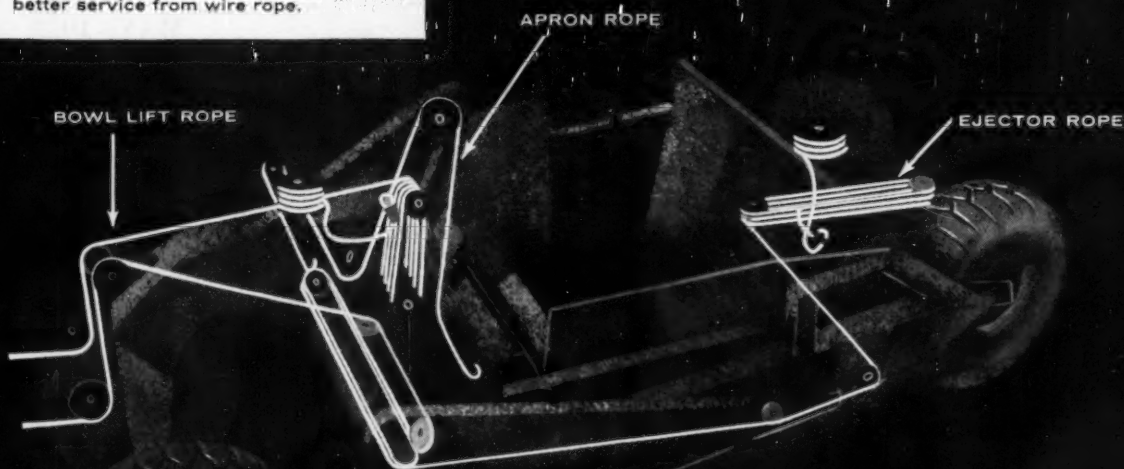
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ONE OF A SERIES of advertisements to help the construction industry get better service from wire rope.

CARRY TYPE SCRAPER



BOWL LIFT ROPE

6 x 25F PREformed Regular Lay Whyte Strand IWRC
6 x 25F PREformed Lang Lay Whyte Strand IWRC

APRON ROPE

6 x 25F PREformed Lang Lay Whyte Strand IWRC

EJECTOR ROPE

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Macwhyte Scraper Ropes can lower your yearly rope costs!

Scraper service needs the best wire rope — and the right rope will cut costs.

For carry-type scrapers, Monarch Whyte Strand 6 x 25F IWRC is the *correct* rope. It is specifically designed for the severest service wire rope can get. The outside wires are big and tough. They provide plenty of surface for abrasion-resistance. The independent wire rope core gives extra crush resistance, while the 199-wire PREformed make-up assures a flexibility that matches the rug-

ged demands of constant heavy service.

The thorough Internal Lubrication of Whyte Strand Wire Rope is a further help in extending service life under severe service. Check these features. They mean longer life — and that means less rope for you to buy!

For helpful information about Wire Rope and its correct use on contractors' equipment, write for your free copy of Bulletin 5702. It's loaded with helpful cost-saving information.

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MACWHYTE Wire Rope COMPANY

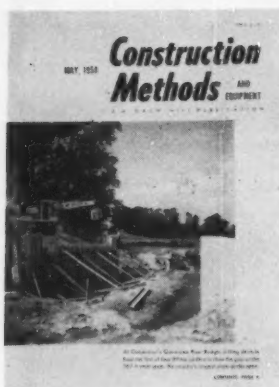
MACWHYTE WIRE ROPE COMPANY

2941 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel, Plastic Coated and Nylon Coated Wire Rope, and Wire Rope Assemblies. Special catalogs available.

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There's a Macwhyte Distributor near for Quick Service

**ON THE COVER**

Handling a $\frac{1}{2}$ -yd Blaw-Knox bucket to pour 250 yd of concrete was not the only task assigned the Gradall on this 40-ft bridge job. The rig removed broken concrete from the old span and placed it for riprap, dug footings, stripped forms, back-filled abutments, and erected steel deck beams. The Montgomery County, Md., Department of Public Works handled the job.

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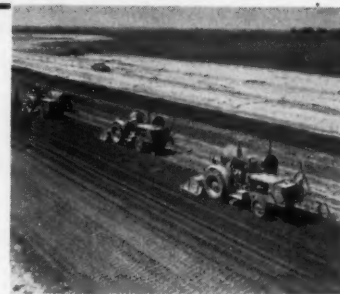
NEXT MONTH

Foundation contractors Coakley & Booth Inc. have developed a new technique for sheeting excavations. Instead of placing sheeting planks behind the flanges of driven soldier beams, they clip them to the face. We'll explain how this saves time, money, and material in the June issue.

Pay Dirt in This Issue

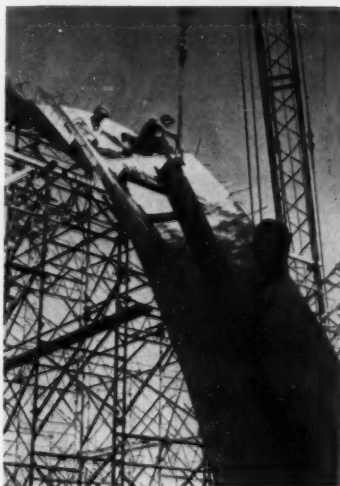
Tough Specs Demand Precision Earthwork ... 96

First of two articles on the \$22-million AASHO Test Road Project in Ottawa, Ill., tells how rigid earth-moving controls can make a road-building job highly unusual.



Cranes, Winch Lower Pipelines 114

A pair of unusually difficult pipeline crossings take extra care. Contractor assembles both lines on falsework and lowers them with minimum deflection into the trenches.



Precast Arch Sections Form Thin-Shell Roof ... 146

A Colorado Springs contractor builds a high school gymnasium by precasting 65 sections of folded-plate concrete roof panels and placing them on tubular scaffolding.

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These portable pumps prime at 30 feet lift!

Prime and reprime at lifts up to 30 feet.

Easy to move because of light in weight aluminum construction. (The rugged *Midget* weighs only 48 pounds.)

No check valve, so there's nothing to foul and cause priming failure.

Straight-in suction increases capacity and efficiency.

Four models to choose from:

Midget	1½"	6,500 GPH	2.25 HP
Pelican	2"	8,500 GPH	2.75 HP
Hawk	2"	12,000 GPH	5.5 HP
Eagle	3"	18,000 GPH	6.8 HP

THE GORMAN-RUPP COMPANY

305 Bowman Street, Mansfield, Ohio



Pump at rest—Captured liquid retained for priming. No check valve.



Priming action—Entrained air (B) escapes at (A) to be discharged. Priming liquid returns (C) to entrain more air.



Pumping action—Straight-in suction voids entrance restrictions. Water enters direct to the eye of impeller. Sediment is purged.





Up-to-date, streamlined lubrication method
pays significant dividends in maintenance savings

Texaco Simplified Lubrication Plan

Plan can reduce lubricant inventory and improve lubrication. It can mean more productive man-hours, less repair costs, less time lost

If you are using more than six lubricants for your major lubricating jobs, chances are your maintenance costs are a lot higher than they should be. Storage problems, handling costs, and the dangers of mis-

application are often costly results of stocking more lubricants than you need.

Texaco Plan cuts number of lubricants needed

Specifically tailored to your operation by your local Texaco Lubrication Engineer, this new plan can cut your requirements to not more than six lubricants for *all* your major lubrication needs. Yet the

(Advertisement)



The Texaco Simplified Lubrication Plan is saving maintenance dollars on this big power house project. This impres-

sive excavation is over 4,000 feet long and between 40 and 90 feet deep.

Plan is simple to put into action; it works smoothly; and above all, it will save you a significant amount of money.

How the Texaco Plan works

The Texaco Simplified Lubrication Plan is based on a proven combination of multi-purpose lubricants — varied to meet the particular requirements of your job. Your Texaco Lubrication Engineer will work with you, going over all your lubrication needs to see that your operation gets the *best* in modern lubrication with the *minimum* number of lubricants.

Get the complete story

Your nearest Texaco Lubrication Engineer can

give you complete information on the Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States; or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

Motor Freight's aluminum frameless dump trailers deliver 3,000 extra pounds of payload every trip. Mr. Robert Ress, vice president of the New Philadelphia, Ohio, hauling firm says, "We've been hauling bulk materials for over 20 years, and our fleet includes many different types of trailers. Our experience with these aluminum frameless units has certainly been profitable. The reduction in deadweight enables us to haul that extra payload and at the same time stay well under the legal load limit. These units pay their own freight, too. We get back the added cost in less than a year; from then on, it's clear profit."

The 22-ft, 28-cu-yd tandem axle HY-TEC model shown here weighs only 7,800

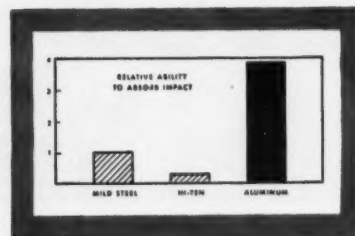
ALUMINUM DUMP TRAILERS PUSH PROFIT UP AT A CLIP OF 3,000 EXTRA POUNDS PER TRIP

pounds. It is built of tough Alcoa® Aluminum alloys by the TRUCK ENGINEERING CORPORATION, of Cleveland, Ohio. Today's durable aluminum truck and trailer dump bodies, besides providing greater earnings, last longer even under rough service, return solid savings through lower maintenance costs. Corrosion-resistant aluminum never needs painting, stays newer looking with minimum care.

Get all the facts today! For the names of other truck operators who are enjoying comparable benefits, plus your FREE copy of Alcoa literature, write Aluminum Company of America, 1879-E Alcoa Building, Pittsburgh 19, Pa.

Proof! Aluminum Is Tougher Than Steel!

Dump bodies built of Alcoa Aluminum alloys can take *three* times the impact of steel—at *half* the weight!



Your Guide to the Best in Aluminum Value



"ALCOA THEATRE"
Exciting Adventure
ALTERNATE MONDAY EVENINGS

HIGH LIFTS or LOW LIFTS

they're easier with a NORTHWEST!!!

● Go through the whole Northwest Machine—any model from the big 95 to the Model 25! Booms!—sturdier for workhorse lifting—Uniform Pressure Swing Clutches for smooth swinging, and accurate spotting... cool running, trouble-free!—the "Feather-Touch" Clutch Control with the "feel-of-the-load," free of the complication of delicate mechanisms, valves, pumps and compressors,—a choice of Boom Hoists including the Northwest Independent High Speed Boom Hoist, a rugged unit capable of trouble-free service in hour after hour operation—a wide range of other equipment including Pivoted Gantries, Removable Counterweight, Sectional Boom Hoist Rigging and Pendant Lines, Telescopic Boom Struts, Adjustable Jibs, extended Boom Point Sheave Shafts, and 3rd Drums that make possible three load lines.

Add to this that Northwest quality of "always being ready to go." We bear it everywhere and Northwest users will tell you so. It's the big reason why Northwests are money makers.

NORTHWEST ENGINEERING COMPANY
1503 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois



Right: Two Northwests coordinate smoothly to place a heavy precast concrete beam.

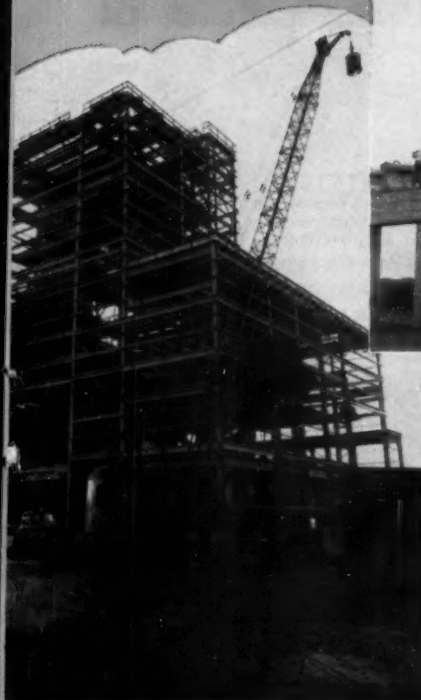


A big Northwest 80-D makes an easy job of pouring. Plenty of boom and the jib make placing easy over a wide area of floor.

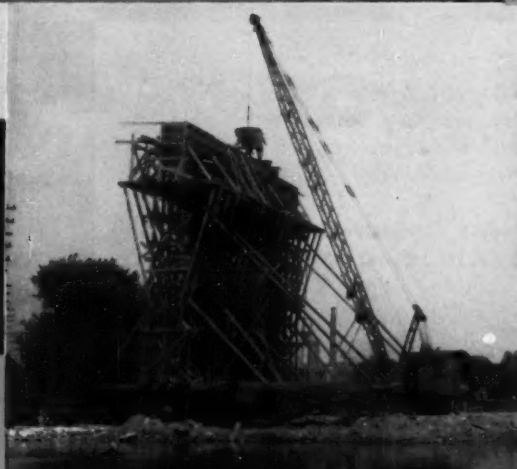


Above: Pulling sheeting, jacking or driving piles or sheeting is all in the day's work for a Northwest.

Left: A Northwest Model 41 pours smoothly to forms for a bridge pier.



Above: High floors are no problem with a Northwest.



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Always Ready to

GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

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Capacity

TRUCK CRANES
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Capacity



How Walter Kidde Constructors use Berger Instruments from the ground up

...on \$26,000,000 of construction



You're looking in on just four Walter Kidde projects out of some 50-odd currently under way from one end of the country to the other. And just as you see Berger Transits and Levels in action here, you'll find still others paired up with Kidde engineers on job after job the country over. For Kidde—like so many other leading constructors and engineers—not only begin the job with a Berger, but rely on Berger Instruments to accurately point the way through every phase of construction plus the precision installation of plant equipment. Take one into the field and see why they're rated the "best in sight."

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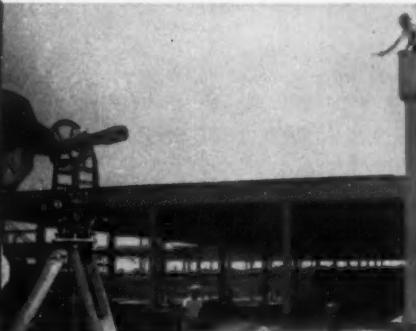
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← Grading

M & M Candy Plant. Installing gravel for sedimentation tank with Berger Wye Level. "A year on the job without adjustment" said Walter Kidde engineer. 350,000 sq. ft. plant will turn out better than a million pounds of M & M candies weekly.

Erecting

Savarin Coffee Plant. Projecting a line to roof of building with Berger Transit. 117,000 sq. ft. plant "has unusual number of curves, yet tolerance was held within $\pm \frac{1}{4}$ in. on building circumference." ↓



Installing

National Biscuit Company Plant. Lining up baking ovens precisely with Berger Instrument. Huge 750,000 sq. ft. plant, over 1,000 ft. long, is nearing completion. ←



↑ Excavating

Warner-Lambert Pharmaceutical Plant. Laying out footings with Berger Transit, for new wing to tie-in with building in background. "Optics unusually sharp", remarked engineer on the job.

Accept this

L-W

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PROFIT MARGIN**

Yes . . . prove to me that C Tournapull with 18-yd Fullpak scraper moves more dirt . . . at less cost . . . than any other scraper in its class. Phone me on or about at to arrange for a demonstration.
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To prove this claim we will demonstrate the "C" on your job, in any material, under any working conditions. We will show you why C Tournapull *moves more dirt, at less cost*, than any other scraper in its class. You are interested in more production and bigger profits. Call your LeTourneau-Westinghouse Distributor, or fill out the above "request for demonstration" and mail it to him now. CP-1929-DC-1



LETOURNEAU-WESTINGHOUSE COMPANY

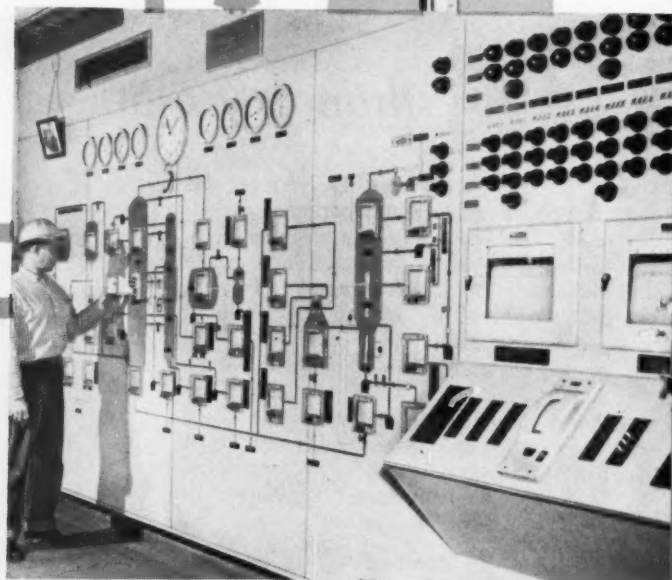
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ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

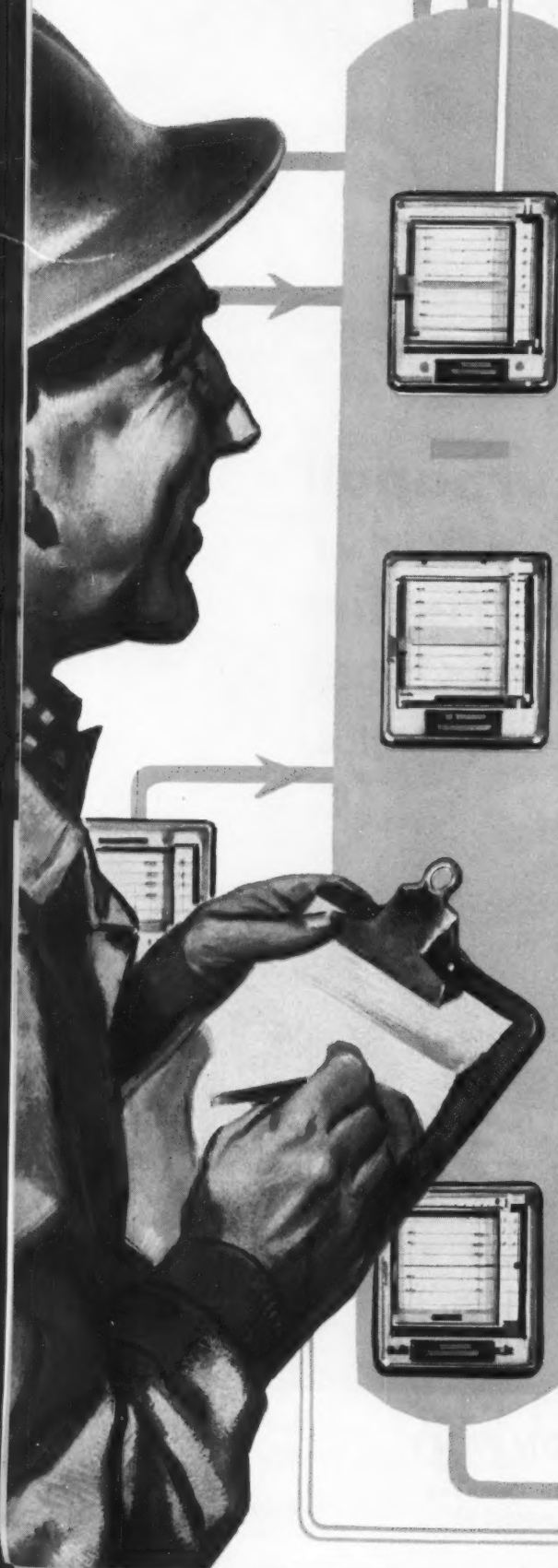
WHERE QUALITY IS A HABIT



Nothing



Operator checks end-point of product running through one section of Standard's Whiting, Indiana, refinery.



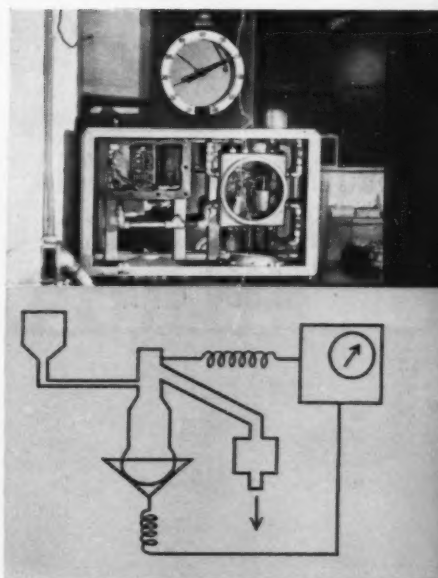
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Automatic
end-point testing
device developed
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research men
makes certain of the
uniform quality of
diesel fuel and gasoline
delivered to you.

Scientists at Standard Oil never stop in their drive to improve and then improve again the uniform quality of the petroleum products that bear the Standard Oil trade-mark. These engineering research scientists have now created wholly new instruments for performing near-continuous physical analysis *automatically*.

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This is part of the research pay-out, the "something more" research builds into the products you buy from Standard. This is your return from Standard's investment in research. And now there are 48 district offices in the 15 Midwest and Rocky Mountain states to serve you. Call the one nearest you. **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**



Automatic end-point tester works this way. A small sample is placed in an electrically heated flask. The temperature is measured and recorded during a heating cycle when distillation is accomplished. Distillate is condensed and drained, the flask temperature is lowered by introduction of the next sample, and the apparatus is ready for another test.

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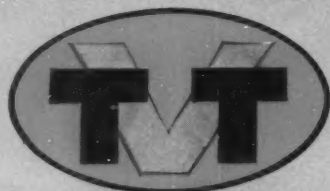
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- TOP VALUE** in general all 'round satisfaction.

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Cable Address: BROSIRES

25 TON CAPACITY to haul a large percentage of loads

DESIGNED FOR LIGHTNESS without sacrifice of strength. (Only 9,000 pounds)

ALLOY STEEL MAIN BEAMS from "tail" to and including gooseneck

EMBODIES ALL BASIC FEATURES

VOLUME PRODUCED to insure a low price

BEAVER TAIL END for easier loading and lengthened load capacity

LONG FLAT GOOSENECK carries bulldozer blades, dippers, etc.

AMPLE SPACE IN GOOSENECK to carry jacks, blocking, etc.

Construction News From Washington

Washington, D.C.
May, 1958

Atomic Earthmoving

The Atomic Energy Commission, confident it already has proved that atomic bombs can be used as a peacetime superexplosive, is drawing up a program to provide specific answers about the kind of earthmoving jobs the A-bomb can do.

Government scientists set off a "baby" atomic bomb—with explosive power equal to 1,700 tons of TNT—inside a Nevada mountain. The results were impressive.

The blast crushed 400,000 tons of rock within a 260-ft radius. The radioactivity and tremendous heat were confined to a small area inside the mountain. Private industry already has submitted eight proposals from oil, mining, and utility companies for further experiments along this line.

Of more significance to construction men, however, AEC is surveying such government agencies as the Corps of Engineers, Geological Survey, and Soil Conservation Service for proposals on the possible use of atomic bombs for earthmoving purposes.

Because of the fallout hazard, such explosions now would have to be in a remote area of the world. But AEC Commissioner Willard Libby is hopeful that the fallout problem eventually can be minimized so that the use of atomic explosives will be practical for large-scale earthmoving in the U.S.

Roadbuilding Precedent?

The first really big anti-recession measure calling for federal construction spending may permanently increase the federal government's share of the cost of highway construction. It's part of the \$1.8-billion increase in federal aid to highways.

The federal government assumes 90% of the cost of the Interstate Highway System. Now, in the new anti-recession measure, the federal government is going to pay two-thirds of the cost on primary, secondary, and urban roads.

Up to now, these so-called ABC roads have been paid for on a 50-50 state-federal basis. But as an anti-recession measure, Congress voted, and the President approved, the new formula for the \$400 million in additional funds to be allocated to the states for ABC roads for the year beginning July 1. In addition, the Administration has \$115 million it can loan to the states to pay up to two-thirds of the smaller shares they must put up.

The new measure also provides an additional \$300 million for the Interstate System for the fiscal year 1960. This, plus the removal of the pay-as-you-go restriction on the trust fund from which all highway funds are taken, will permit the federal government to spend \$900 million more on roads in 1960 than would have been possible if no new legislation had been passed.

continued on next page

NLRB May Get Tough

The National Labor Relations Board shows signs of giving some fairly tough interpretations to the Taft-Hartley Act in areas vital to the construction industry. For one thing, it has spelled out the rules under which a union-operated hiring hall will be tolerated:

- Referral of applicants shall not be based on, or in any manner affected by, union or non-union membership or internal union policies or requirements.
- Employers must have a right to reject any job applicant referred through the union's hiring hall.

This will leave intact the hiring hall system that is so important to the construction industry. But—if the Board really means business when it comes to enforcement—it will weaken the stranglehold that the construction unions have enjoyed on employment.

Signs are the Board means business. In a companion move, General Counsel Jerome D. Fenton has warned, that effective September 1, NLRB is going to crack down on union security clauses and practices that smack of, but have not been specifically labeled, closed shop.

Congress and Construction

Congressional concern over anti-recession measures guarantees that 1958 will go down as one of the big years for federal aid to construction.

The temper of Congress is shown by its passage of the bill to accelerate roadbuilding, the \$1.5-billion Rivers and Harbors Bill that Pres. Eisenhower vetoed, and the bill to create a \$1-billion fund to lend states and cities money for local public works.

But on other measures, there isn't quite the same steam. In fact the emphasis on what to do about the recession has caused some long-term public works projects to be put in the shade.

A notable example is the lease-purchase program for construction of federal buildings. This program has been killed by the House Public Works Committee. Instead, it approved immediate federal construction of some buildings with funds to be voted by Congress.

Teamsters Show Their Strength

Jimmy Hoffa and his powerful Teamsters Union are losing none of their effectiveness in driving hard bargains in contract negotiations. New master contracts in the southeast, southwest, and central areas of the United States have been concluded this spring providing 17¢ hourly wage increases spread over two years. Also going up: Management's contribution to the Teamster Pension Fund (by \$1 per week per worker this year, another \$1 per week in 1960) and employer contributions to welfare funds (by 25¢ a week per worker).

It's clear now that, whatever else the McClellan committee's hearings on the Teamsters may have accomplished, they have not diminished the giant union's economic effectiveness. The Teamsters have more members (1,400,000), a bigger treasury (\$41 million plus) than ever before. And they're keeping the organizational heat turned on. The Hoffa-dominated executive council has just set aside \$170,000 for organizational work this year.



You find Gates Hose where anything flows
St. Lawrence Seaway — one of the biggest construction jobs in the world — employs thousands of feet of Gates Type 19B Hose. Shown here is Long Sault Dam.

(PHOTO COURTESY NEW YORK POWER AUTHORITY.)

Industry has in use today **more than 4000 MILES** of Type 19B* Gates Hose

...and industry all over the world uses equally impressive amounts of the air, water, steam, suction and many other hoses in the full range of types and sizes made by Gates.

Back of this world-wide acceptance is a continuing program of *specialized* hose research at the multi-million dollar Gates Research Center staffed by more than 200 chemists, physicists, engineers and technicians.

It is the aim of this *specialized* research to increase hose utility and life, and to lower industry's annual hose costs.

Because Gates Hose is so widely preferred, it is quickly available from leading distributors in all industrial centers in the United States, and in 90 countries throughout the world...and its outstanding performance is guaranteed by the **World's Largest Maker of V-Belts.**

***Gates Type 19B Hose** carries air, water, coolants, oils, greases, gasoline, kerosene, or solvents. This popular hose—one of many in Gates full line—is always available from your nearby Gates Distributor.

The Mark of *Specialized* Research

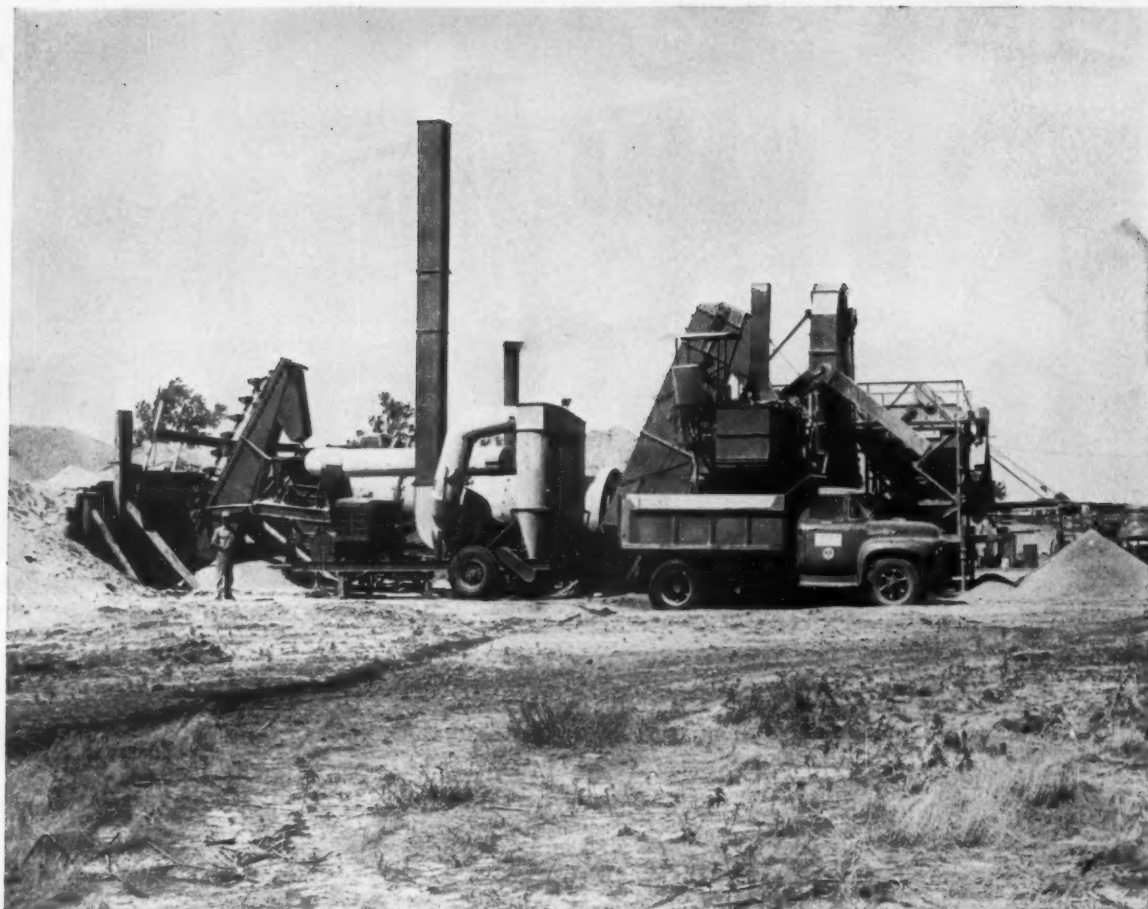


The Gates Rubber Company • Denver, Colorado

TPA 335

Gates Industrial Hose

Made in a Full Range of Types and Sizes



Contractor George M. Myers reports: "Our Barber-Greene Model 845 Asphalt Plant averages 900 tons daily"*

This is the output of Mr. Myers' plant at its 21st location.

Changing job sites 21 times is a good record for any asphalt plant, but it is not unusual in a Barber-Greene Model 845. Even among Barber-Greene plants, the 845 is outstanding. It was specifically developed to achieve the utmost in portability and should not be confused with any other continuous plant. The dryer includes the hot elevator on the same chassis... the mixer has two-bin gradation unit included—these and other features contribute to its superior portability and performance.

Mr. Myers continues:

"We frequently move 100 miles or more... deliver an

average of 80 tons per hour*... maintenance to date has been routine... repair minor... operating costs low... with reasonable care there should be no limit to the life of our plant."

Like all Barber-Greene Continuous Plants, the Model 845 is inherently automatic as a result of the aggregate and bitumen feed being interlocked. The human element is removed, assuring uniform mix quality.

Barber-Greene offers a complete line of both continuous and Batchomatic plants in any capacity to suit your needs. Write for full information.

*Rated capacity is 60-90 tons per hour.

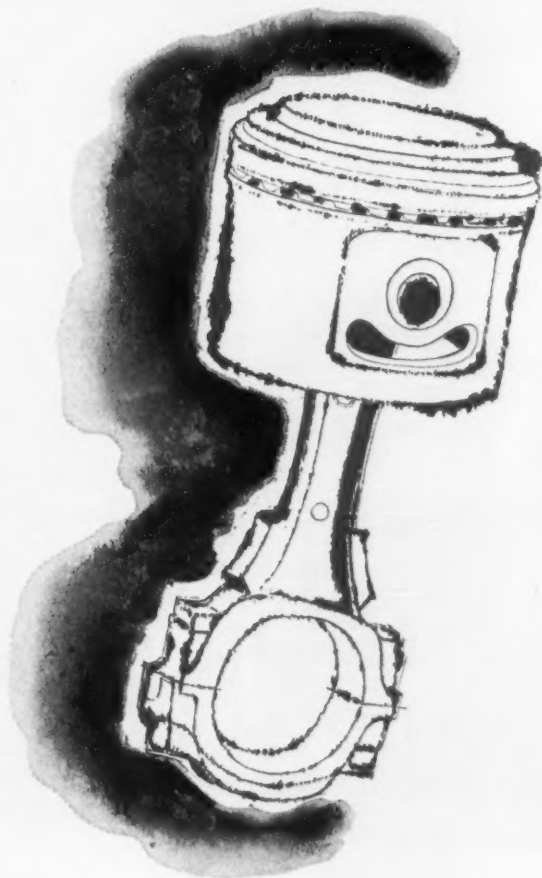
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Barber-Greene

AURORA, ILLINOIS, U.S.A.



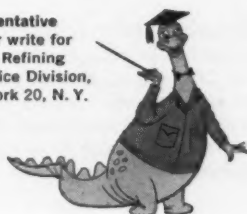
CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT



Pistons... Oil... and How to Save Money

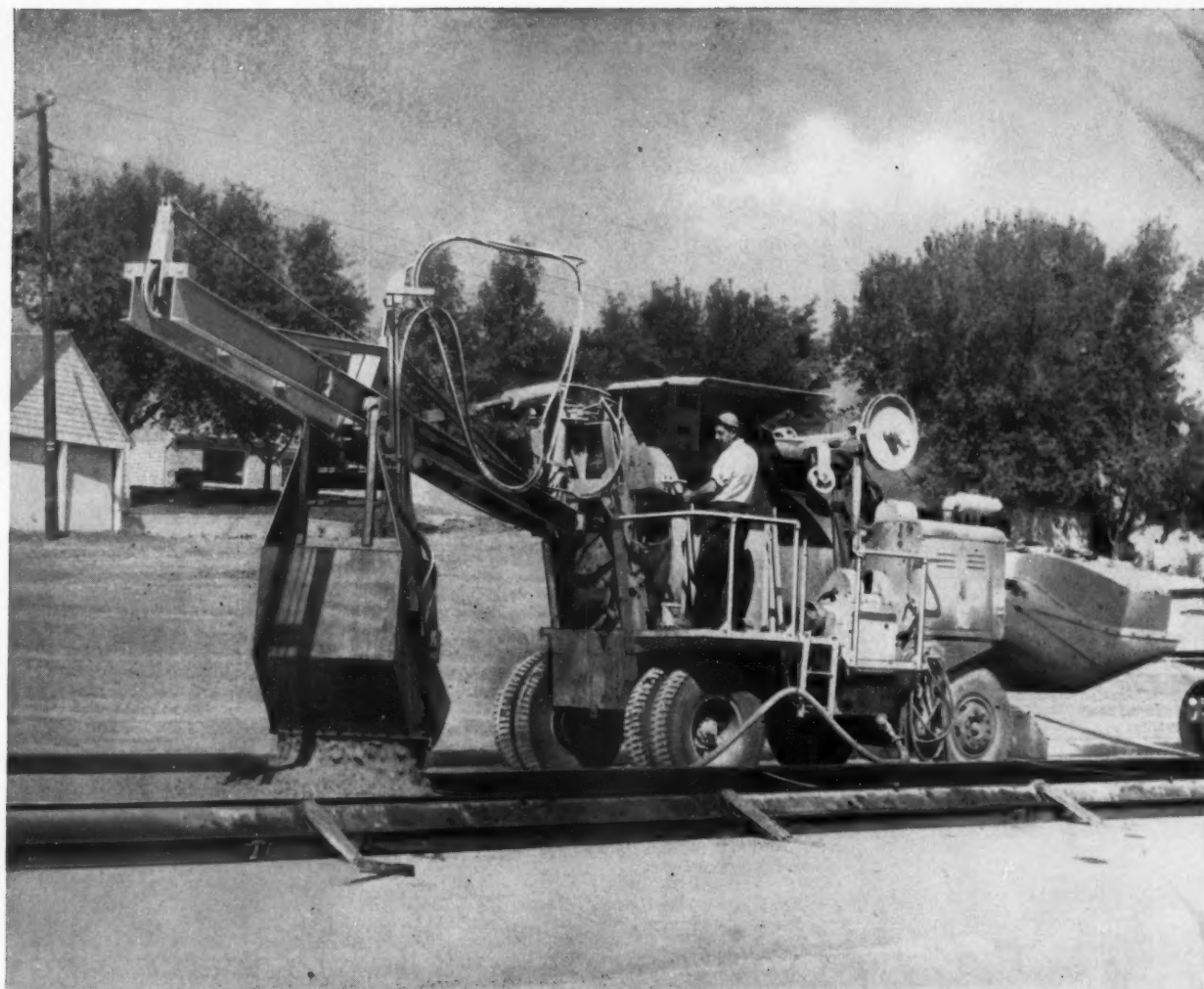
The longer your pistons work before need of ring replacement—the less your cost of operation. Sinclair Tenol® Oils have the reputation for giving longer service to cylinders, rings and other vital parts. Refill with Tenol now. Next time management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.

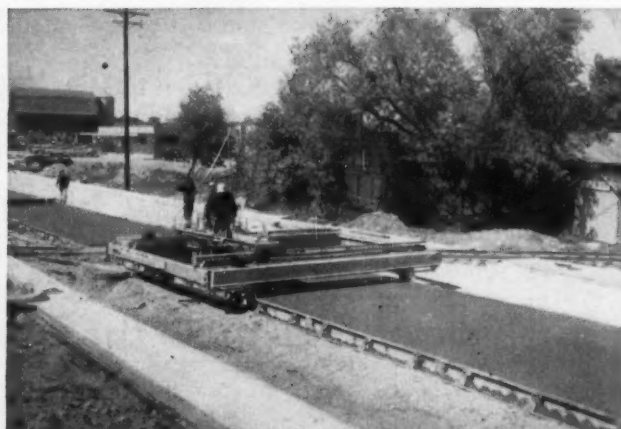


SINCLAIR

Tenol® Oils




Pouring bridge pilings — On a series of 12 bridges along a new turnpike, Koehring 16-E twinbatch shuttled from bridge-to-bridge, pouring pilings, footings, abutments, wing-walls, and decks. Above, filling corrugated piling shells, the 16-E discharges into a chute. On work like this, bucket can be opened or closed at any time to control the rate of discharge.



"Timely" precision-finishing is important on any paving job. Operating at almost twice the speed of a 34-E paver, Koehring Longitudinal Finisher handles all practical consistencies of concrete — harsh, wet or dry. It overcomes slump difficulties on elevated curves, grades — produces smooth, mechanically accurate slab surface, with uniform crown transitions.

16-E twinbatch® OFFERS a time-saving idea FOR YOUR PAVING JOBS



On most street and highway paving, there's extra concrete to be poured in addition to the main slab — such as: center-strips, scattered intersections, curbs, gutters, culverts, approaches to driveways, bridges and side-roads. These jobs require the time-saving mobility of a rubber-tired paver — and here's an answer to the problem.

Mobile as a batch truck

With a Koehring 16-E *twinbatch* in your paving spread, you can get back on new slab in as little as 7 days to do clean-up work, pour adjoining slabs, or widen highway and airport strips. It works on or off-pavement, drives from one work-section to the next under its own power. Where frequent moves are involved, this saves waiting for trailer, loading and unloading delays.

For all its time-saving mobility, the Koehring 16-E *twinbatch* is primarily a production paver. On main slab work, it hits a top output of 86.7 batches

an hour (based on 60-second mixing cycle). This *reserve* production capacity with Koehring *twinbatch* Autocycle mixing lets you pick up any lost time resulting from bad weather and other normal job delays.

Averages 50 yds. an hour

As a result, Koehring 16-E *twinbatch* easily maintains an average of over 76 batches an hour — 8 hours a day. Based on 16 cu. ft. per batch, plus the usual 10% overload, this assures you 50 cu. yds. of concrete per hour on straight-production paving — with a small crew.

While its usefulness is unlimited as a general-purpose paver, the Koehring 16-E *twinbatch* also serves as a mobile concrete mix plant. It discharges into overhead hoppers, forms, chutes, loads trucks. Boom elevates 60° — gives controlled discharge at 21-foot height (higher with special boom). Do you want to learn more about it? Your local Koehring distributor is the man to see. Better call on him right away.



Big 34-E twinbatch team working side-by-side widened runways on this military airbase, completed job "on the double". Notice how one long-boom paver reached the outside half, while the other 34-E poured the inside half of the strip. For dependable, high-production output on your major road and airport paving contracts, better look into the big Koehring 34-E.





Hyde and Cook's K-45 Kompactor* boosts daily compaction on 10-million cu. yd. job!

Few contractors ever have the compaction problem that faced Hyde Construction Co. and Cook Construction Co. when they started a \$4-million naval air station job in July, 1957. The joint-venture contract called for approximately 10-million cu. yds. of earthwork just north of Meridian, Miss.

First, density specifications were rigid. Second, the soil was wet and predominantly sand, with some clay.

*TRADEMARK



BUFFALO-SPRINGFIELD
Roller Co. - Div. of Koehring Co.
SPRINGFIELD, OHIO

Third, the contract permitted 360 calendar days for completion, with \$500-a-day penalty clause—and normally *only about 180 days a year can be worked in the area!*

With a vast array of conventional compaction equipment, the contractors were able to average 50,000 yards a day. This meant at least 200 working days would be required.

By mid-September, however, compaction had been increased to 65,000 yards a day—thanks, in a large part, to a Buffalo-Springfield® K-45 Kompactor roller put on the job.

Boosting production and meeting rigid specifications is nothing new for the self-propelled K-45 Kompactor . . . and here's why:

The K-45 operates on the "Interrupted Pressure Principle," which allows the machine to exert *all* its compaction effort *downward* . . . for

uniform and maximum density . . . in the fewest possible passes. The K-45's staggered rows of heavy steel "pads" individually enter loose materials with a minimum of displacement either forward or sidewise . . . and then leave without disturbing the compacted areas in any way.

The Buffalo-Springfield K-45 Kompactor has proved itself as the top performer, the top money-maker for leading contractors throughout the country. Airfields, superhighways, military establishments—wherever the job is tough, specifications hard to meet and time short, you can count on the K-45 to do the job better . . . faster . . . and at the lowest possible cost!

See your Buffalo-Springfield Distributor today and get all the facts about the unusual Buffalo-Springfield K-45 Kompactor.

New HEAVY-DUTY INTERNATIONAL



▶ **TRUE TRUCK TORQUE**
▶ **TRUE TRUCK ECONOMY**



INTERNATIONAL model V-225 tractor
with 549 cu. in. V-8 engine



INTERNATIONAL model VF-192A dump
with 401 cu. in. V-8 engine

Greater Gasoline Economy

All-Truck INTERNATIONAL heavy-duty V-8 engines with *True Truck Torque* combine short stroke with low engine rpm. The result: less engine friction and drag. More working power is released from the engine, less gasoline is required to maintain it.

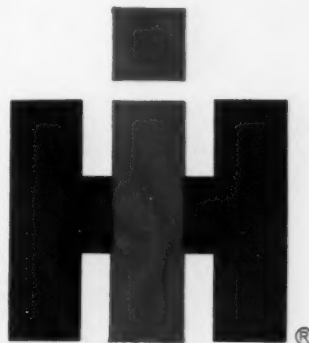
More Usable Power at the Wheels

Efficient engine power doesn't pay off until it reaches the wheels. Heavy-duty INTERNATIONAL V-8 Truck transmissions and axle ratios convert low engine rpm into extra-payload hauling power at the wheels where it counts. That's *True Truck Torque*! There's more "go" with more economy because engine, transmission and axle are balanced to match truck, traffic, terrain and job exactly!

Longer Engine Life

INTERNATIONAL heavy-duty V-8's combine rugged, all-truck design with big 401, 461 or 549 cubic inch displacements to develop full horsepower without life-shortening stress or strain. Exclusive "wet" replaceable valve guides, fully machined combustion chambers and other endurance features cut your maintenance costs.

Whatever your hauling problem, there's a heavy-duty INTERNATIONAL Truck with True Truck Torque V-8 engine to handle it. Proof? See the statements of INTERNATIONAL heavy-duty V-8 truck owners who do the same truck job you do... at your INTERNATIONAL Dealer!



International Harvester Company, Chicago
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

INTERNATIONAL TRUCKS cost least to own!

New Construction Idea News



110-FT. DIAMETER GIANT HOLE is braced by sectionalized 8-in. wide-flange beams, 40 lb. per ft., 21 ft. long, and bolted at the ends. The accurately curved rings by COMMERCIAL back up sheet piling driven in running ground and intermediate layers of water-bearing gravel and boulders.



PHOTO COURTESY OF THE JAEGER MACHINE COMPANY

127-FT. DEEP EXCAVATION for the Pittsburgh pump station foundation is shored to meet developing load conditions by COMMERCIAL ring walers installed on varying centers.

Ring walers

World's largest steel-ring walers—engineered by COMMERCIAL—provide unobstructed interior working areas for giant excavations...speed tricky riverside foundation jobs at New Albany, Indiana and Pittsburgh.

The problem: How to excavate deep pits for two different mammoth foundations a couple hundred feet from the Ohio River—without using the time-consuming, expensive conventional lacework of jacks and vertical and horizontal braces which interferes with excavation and concrete pouring.

The solution: Use the world's largest steel-ring walers as designed, engineered and fabricated by the COMMERCIAL SHEARING & STAMPING COMPANY.

The contracting firm of McHugh, Allegheny & Drake did it on a giant, circular-shaped foundation—for a pumping station—on the Ohio River at Pittsburgh, as part of the \$100-million Allegheny County Sanitary Authority project.

And it was accomplished on an even larger power station foundation—in the shape of a double cross—being built by



"A DEFINITE SUCCESS", say Charles Brooks, Project Engineer (left) and O. W. Simmon, Superintendent for Gust K. Newberg Construction Co. **COMMERCIAL** engineered ring walers brace their

foundation excavation job — 60-ft. deep, 210-ft. long and 96-ft. wide — on the Ohio River at New Albany, Indiana.

keep large pits completely open

the Gust K. Newberg Construction Co. for the Public Service Co. of Indiana, Inc. at New Albany, Indiana.

In both cases, **COMMERCIAL** engineers, working with the contractors and project engineers, were able to come up with the answers which spelled faster, interference-free excavation and concrete pouring.

For the full story of how **COMMERCIAL** steel-ring walers were used in the cofferdam excavation at New Albany, Indiana, send for your copy of Bulletin 300-P1. If you have a similar excavation problem, or if you have a support design challenge involving a shaft, surface or subsurface tunnel project, whatever the size—large or small, we may be able to suggest an equally practical and economical solution based on our more than 25 years of experience in the design of supports for soft ground or rock excavation. Send details to Commercial Shearing & Stamping Company, Dept. B-18, Youngstown 1, Ohio.

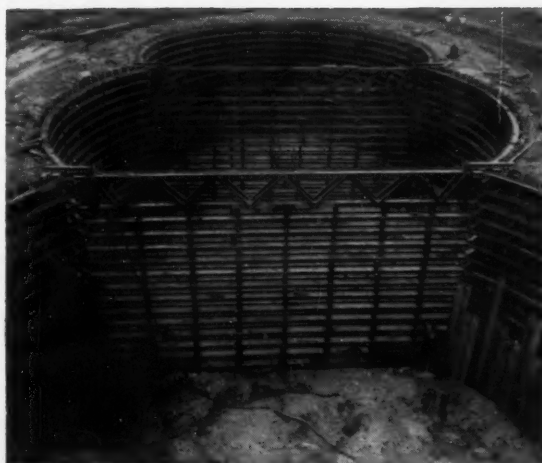


PHOTO COURTESY L. B. FOSTER COMPANY

CURVED-WALL COFFERDAM on the New Albany power station project of Public Service Co. of Indiana, Inc. is walled by three intersecting circles of wide-flange beams fabricated by **COMMERCIAL** — requires only two rows of steel strut bracing.

Tough Job Conditions at Hildebrand Dam Beaten by 100% Bucyrus-Erie Lineup

Hildebrand dam and lock are rising on the Monongahela River in rugged West Virginia mountain country $4\frac{1}{2}$ miles upstream from Morgantown. All excavators and cranes on the project are Bucyrus-Eries. These include a 71-B, a 54-B, two 38-Bs, and a 22-B Transit Crane. All have special jobs to perform; all are doing them well.

Hildebrand Contractors, a joint venture of J. A. Jones Construction Co., Charlotte, N.C., and Charles H. Tompkins Co., Washington, D. C., will complete the 3-yr. project in July, 1959. The lock will have a usable length of 600 feet, a width of 84 feet, and a lift of 21 feet. The dam will be 530 feet long and 70 feet high. These structures will replace two other locks and dams on the Monongahela.

To keep navigation flowing without interruption, the contractor is constructing the dam and lock in four stages behind cofferdams. Despite cramped working quarters and bad weather that held up progress for almost a full season, Hildebrand Contractors are on schedule.

Bucyrus-Erie excavators and cranes will keep your job on schedule, too. Get the facts from your Bucyrus-Erie distributor now.

465E58



Termed the busiest piece of equipment on the job, this 22-B Transit Crane handles a variety of jobs. These include loading and unloading trucks, hoisting forms into place, and handling steel and forms. The machine is equipped with a 65-ft. boom and 20-ft. jib. Defying steep grades, the 22-B moves quickly to scattered locations at the job site.



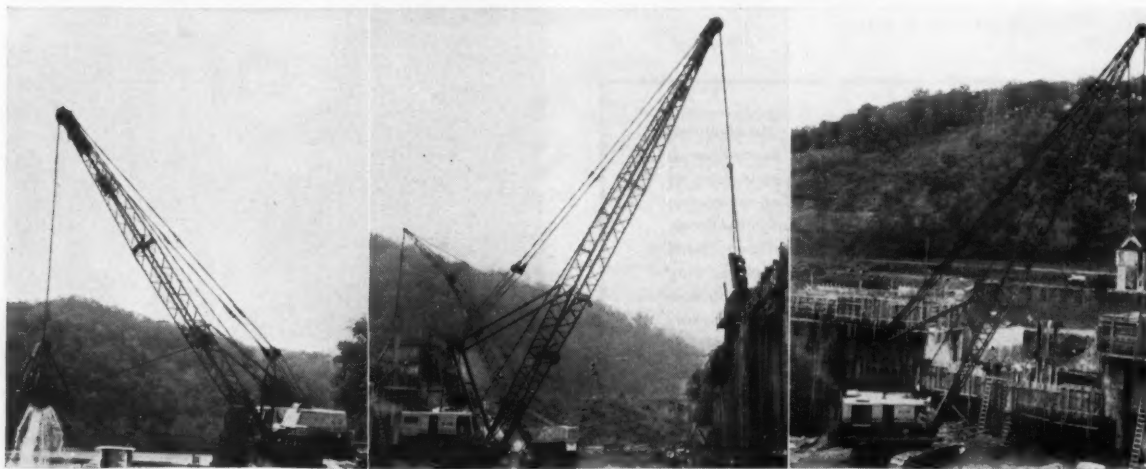
A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Two 38-Bs cooperate to excavate 4,000 yards of rock and 10,000 yards of common material for dam abutments. One 38-B excavates and loads material onto a barge for a trip across the river. The other, working on the opposite bank, unloads this material into end dumps for hauling to regular dump piles.

Team work is important on the Hildebrand contract. Here, the 54-B with 90-ft. boom sets forms and steel. When not pouring concrete, the 71-B works along with the 54-B on this job. Before it was assigned to this section of the work, the 54-B drove piles for cofferdams.

Like other equipment on the job, the 71-B does double duty. After excavating 300,000 yards of common material and 125,000 yards of rock, it pours the entire bulk concrete load of 130,000 cubic yards. Fitted with a 4-yd. bucket on a 90-ft. boom, the 71-B reaches easily to 65-ft. radius . . . works quickly and surely.





SCENE: A little north of Indianapolis, Ind.

STORY: Building of new 5-mile section of Route 31, under Federal Highway Program

CAST: Vogel Construction Company and Cities Service

With the Federal Highway Program underway, it's not surprising that Vogel Construction Co. was awarded one of the biggest contracts in Indiana.

Nor is it surprising that Vogel has awarded all of its lubrication tasks to Cities Service.

For 35 years, Vogel Construction has been associated with many of the best known projects in the area, including the Pennsylvania Turnpike. In that time, they've come to know what to expect of a lubricant . . . and what brand of lubricant can deliver their expectations.

Cities Service is their choice for all lubrication jobs for a very simple reason: It measures up to the pressures of their work. Cities Service C-300 Motor Oil, for example, has an exceptionally high additive level that prevents excessive carbon, sludge and varnish from building up in Vogel's engines, despite their severe service. There's less down-time, less overhaul, less headache.

You can expect a similar experience in your operation when you start using Cities Service, too. Talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.



With know-how written in his face, Construction Superintendent Tony Gasvoda personifies the Vogel policy of only the best . . . a policy that extends to the use of Cities Service lubricants.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Now you can handle **BIG** jobs with a low-cost Series 50 H or 60 H Chevrolet!



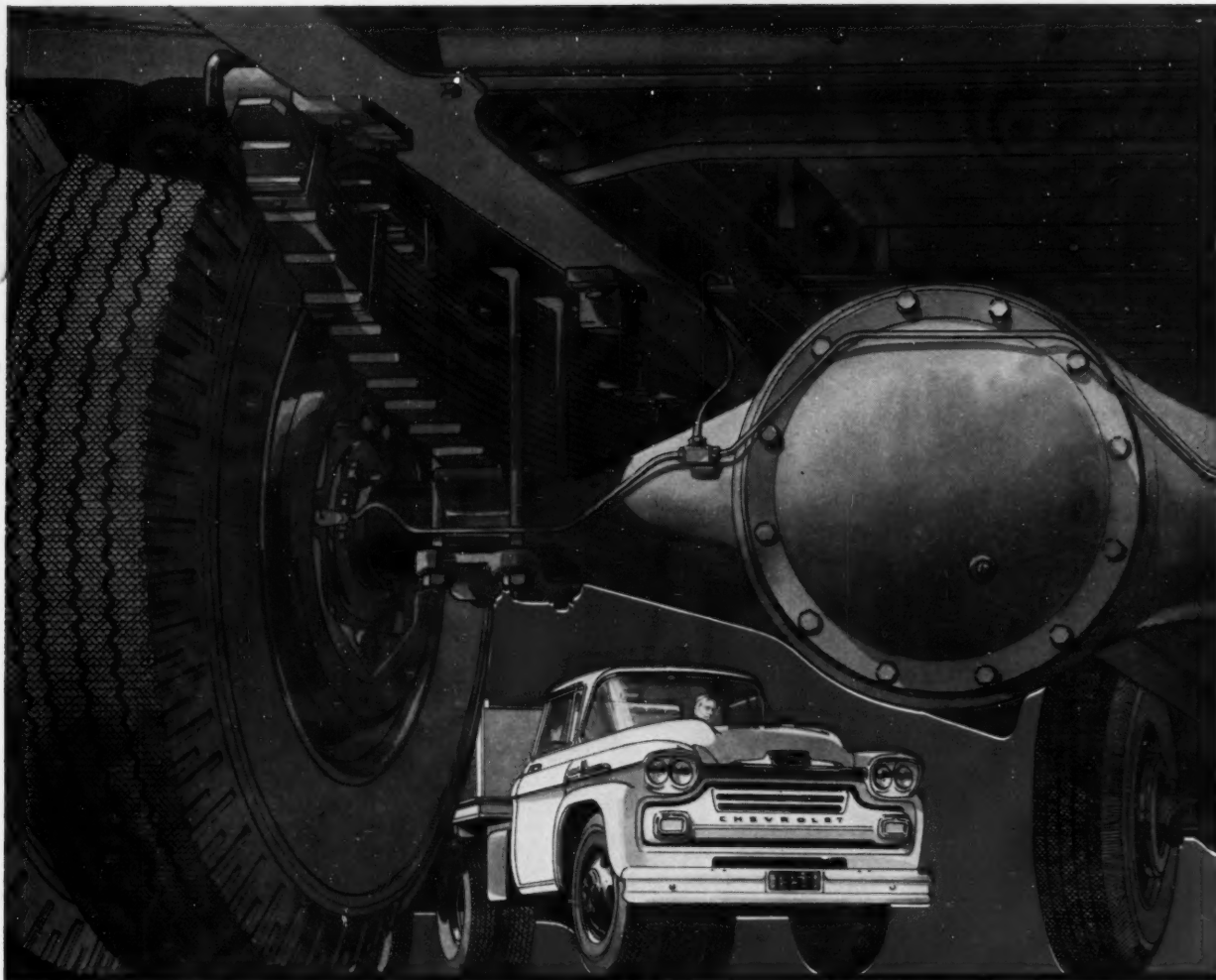
Here's an opportunity to save hundreds of dollars on the next big truck you buy! Extra equipment is now available to broaden the application of economical Series 50 and 60 models. They're ready to do big jobs with G.V.W.'s up to 21,000 lbs. ...and you pocket the big price difference!



Chevrolet's new Series 50 and 60 "H" models are equipped to work like trucks that cost much more . . . to do many jobs that used to call for bigger and more expensive trucks. *They're priced hundreds of dollars lower than other heavy-weight haulers*, yet they're ready to take on tasks requiring up to 21,000 lbs. G.V.W.—thanks to these husky heavyweight components:

- 16,000-lb.-capacity single- or two-speed Eaton rear axles.*
- Big-truck brakes—9½-inch Hydrovac power brakes* or Air-Hydraulic brakes.*
- 4-speed Synchro-Mesh transmission with hard-pulling 7.06 to 1 low gear ratio or New Process 5-speed* or 6-speed Powermatic transmissions.*
- Tough long-leaf front springs that go up to

CHEVROLET TASK·FORCE



2,900 lbs. capacity* at each wheel; rear springs with up to 9,100 lbs. capacity.*

- Heavyweight V8's—modern power from 160-h.p. Heavy-Duty Taskmaster V8 or 175-h.p. Heavy-Duty Super Taskmaster V8.*
- Tough heavy-duty components such as these broaden the application of Chevrolet's Series 50 and 60 trucks. The new "H" models are ideal for many mammoth hauling jobs, such as car haulaways, or for pulling grain semi-trailers, or contractors' dump bodies, and many more. They're true big-tonnage haulers in everything but price, and, chances are, there's one to suit your job. See your Chevrolet dealer soon; see how you can save hundreds of dollars on the next big truck you buy! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

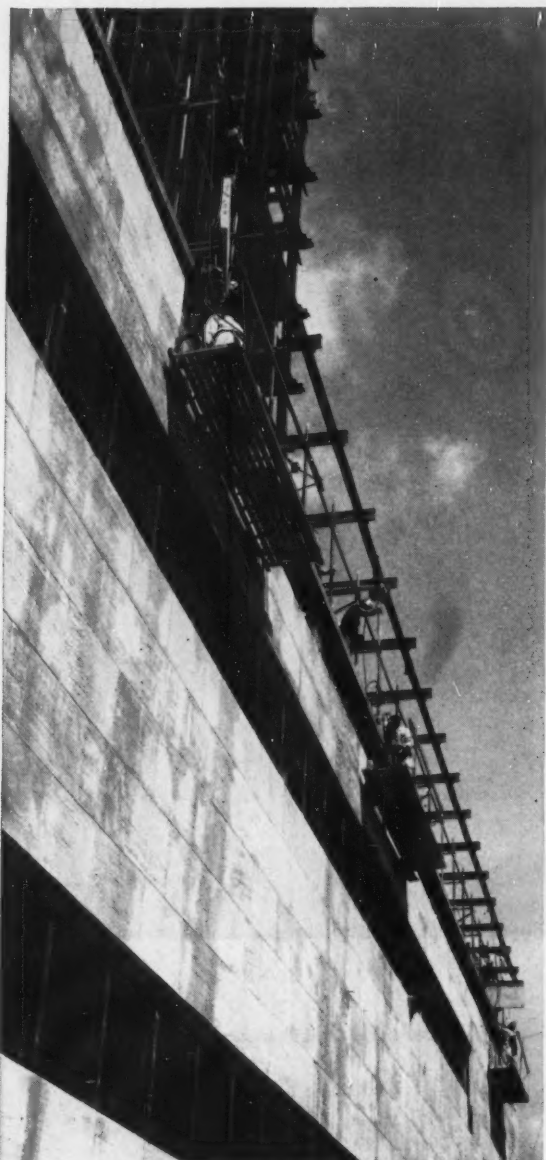
**Extra-cost heavy-duty options.*

TRUCKS

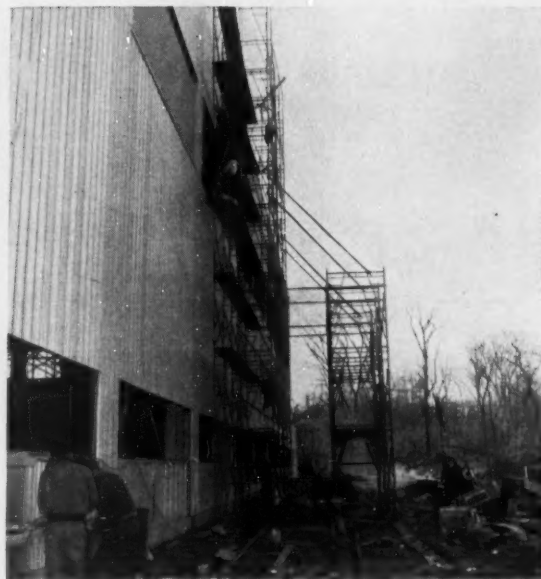
An all-new high-style pickup by Chevrolet!

It's the smooth-lined new *Fleetside*—as handsome a pickup as ever graced a hauler's business! With the latest in styling, it's a standout on any street, and you get extra utility, too. The *big* body—a full 6 feet wide and up to 98 inches long—enables you to haul many additional cubic feet of payload.

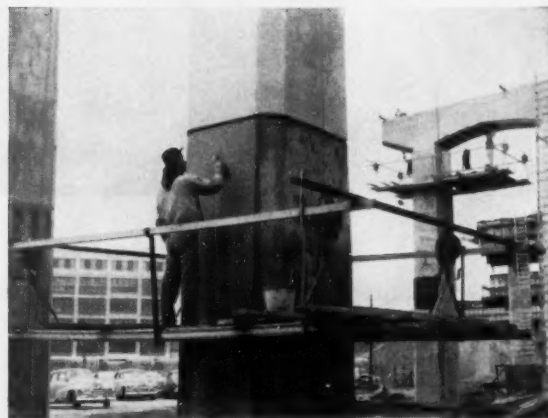
Scaffolding Methods . . . by Patent Scaffolding Co.



SCAFFOLDS AND PANELS RIDE MONORAIL—A monorail, steel scaffolding and working platforms combine to speed construction of the new National Bank of Commerce, San Antonio, Texas. "Gold Medal"® Suspended Scaffolding I-beams make the monorail. "Gold Medal" Junior Swinging Scaffolds are suspended from it by steel cables attached to two trolleys which ride the I-Beam flanges. An electric winch, riding the monorail between the two scaffolds, hoists and moves pre-cast panels to position. "Tubelox"® Scaffolding provides roof substructure for outrigger I-beam, normally used to support "Gold Medal" Suspended scaffolding Machines. The monorail is attached to it by clamps. Cables tie the substructure to the roof. Henry C. Beck, general contractor.



ROLLING SCAFFOLD SPEEDS SIDING WORK—Hunt Construction Co. uses this rolling scaffold for fast metal siding work on a hanger, for U.S. Steel Co. at the Greater Pittsburgh Airport. Scaffold, 28' x 47'-high, is quickly made of "Trouble Saver"® Scaffolding. Casters set into the legs for rolling on planking. Note stabilizing unit at right.



HANGING SAFELY TO BRIDGE PIER FINISHING—Concrete bridge piers for the Killingsley Turnpike, Bridgeport Harbor Bridge, Conn., require finishing after pouring for better appearance. To get up and around these piers quickly and safely, A. S. Wikstrom, Inc., contractor, uses "Gold Medal" Junior Swinging Scaffolds. These are suspended by $\frac{5}{16}$ " steel wire rope from the pier beams and are overlapped at the corners to fit around columns. Other scaffolds are hung from beam mid-sections for work in that area. Easy adjustment by ratchet-action raising and lowering mechanisms provides fast, safe movement on sturdy, strong, level working platforms as the work progresses. This contractor purchased four and rented 18 others for the job.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

SALES

RENTALS

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

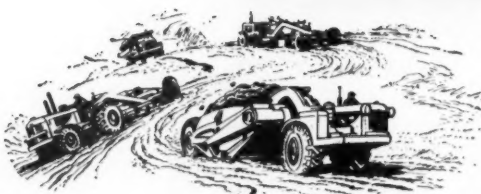


THE PATENT SCAFFOLDING CO., Inc.

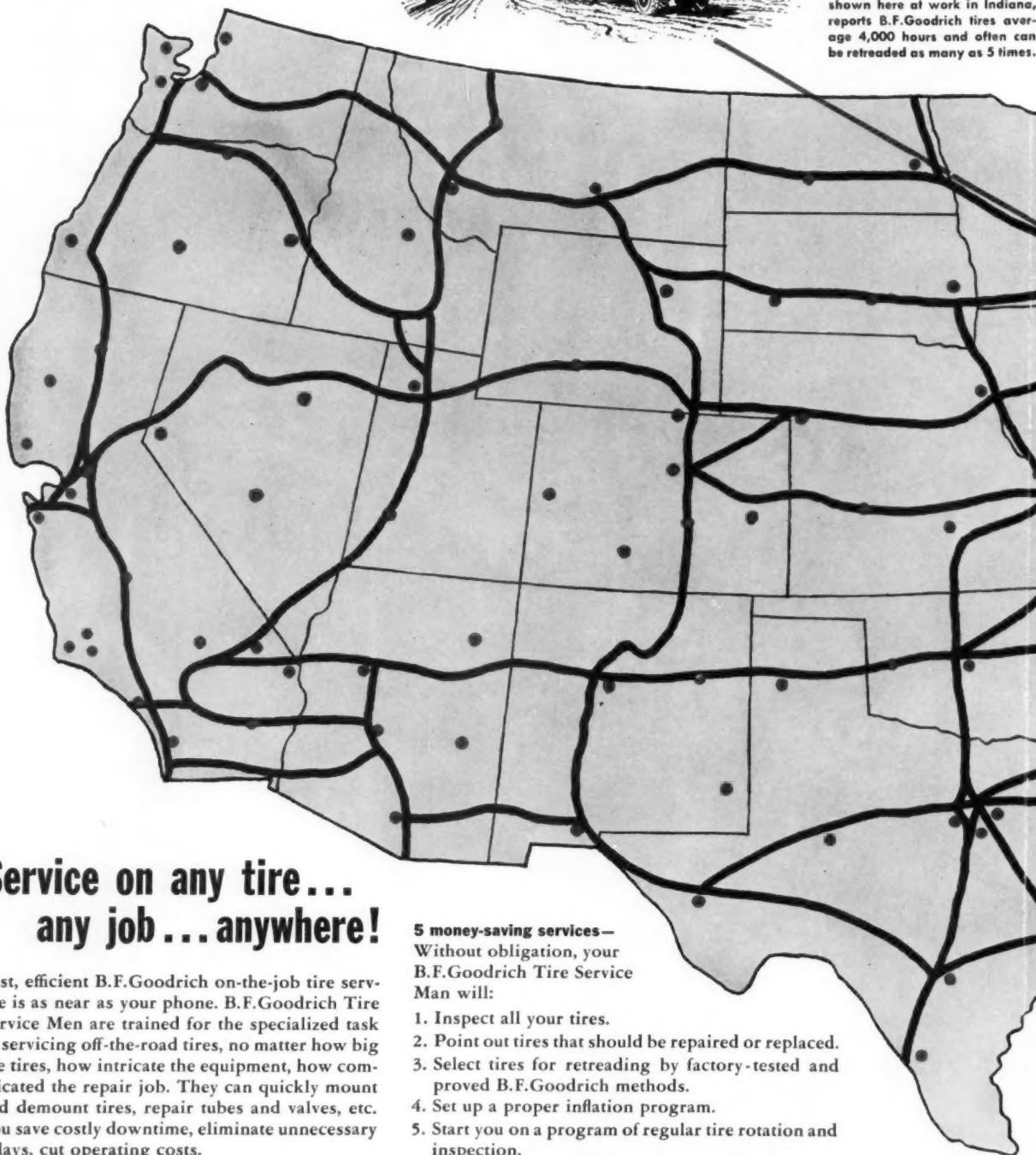
38-21 12th Street, Dept. CM&E, Long Island City 1, N. Y.

1550 Dayton Street, Chicago 22, Illinois • West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.
In Canada: 355 Dufferin St., Toronto • Branches in all Principal Cities

Wherever you go **B.F. Goodrich** tire



S. J. GROVES & SONS CO., shown here at work in Indiana, reports B.F. Goodrich tires average 4,000 hours and often can be retreaded as many as 5 times.



Service on any tire... any job... anywhere!

Fast, efficient B.F. Goodrich on-the-job tire service is as near as your phone. B.F. Goodrich Tire Service Men are trained for the specialized task of servicing off-the-road tires, no matter how big the tires, how intricate the equipment, how complicated the repair job. They can quickly mount and demount tires, repair tubes and valves, etc. You save costly downtime, eliminate unnecessary delays, cut operating costs.

5 money-saving services—
Without obligation, your
B.F. Goodrich Tire Service
Man will:

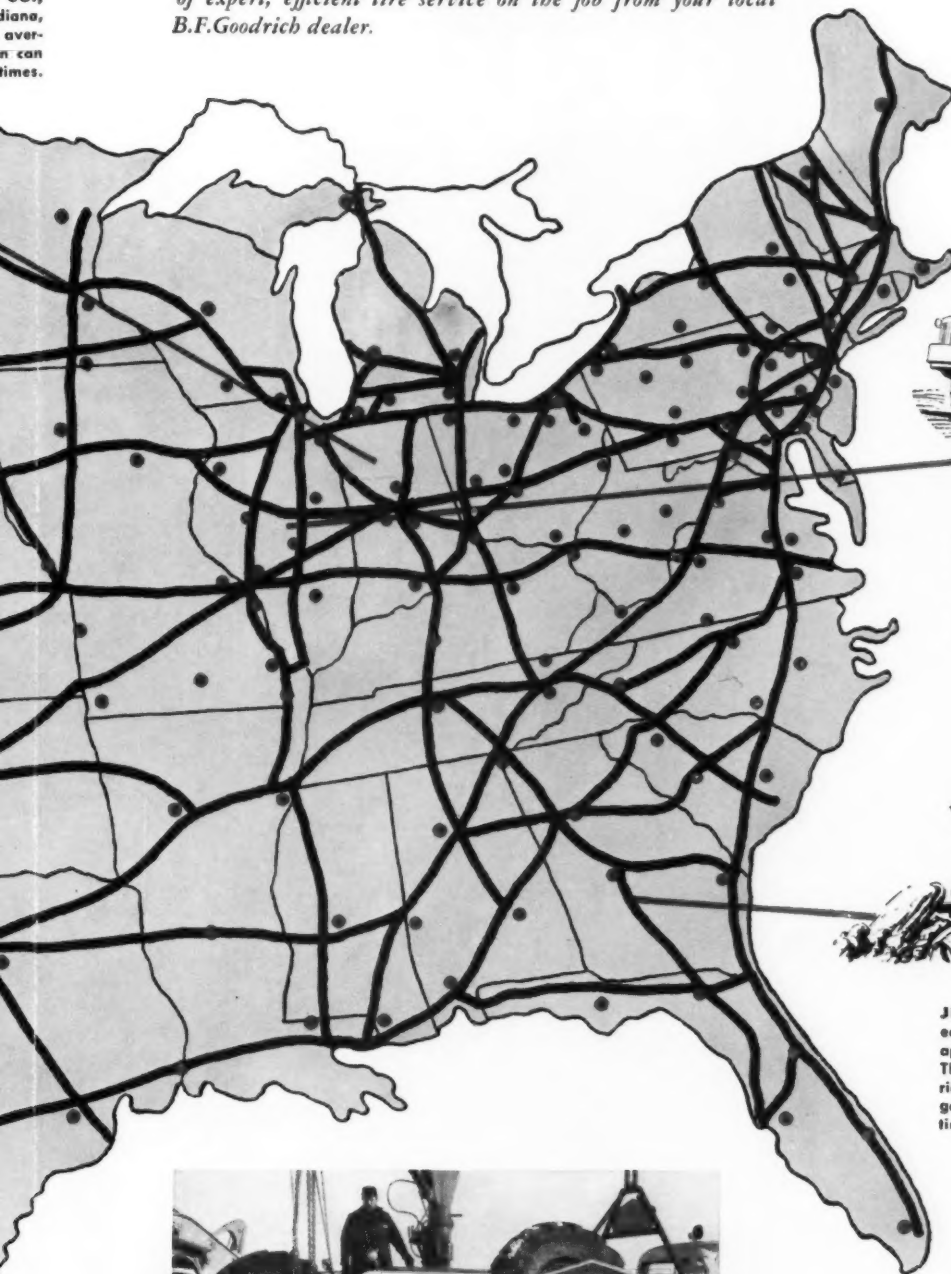
1. Inspect all your tires.
2. Point out tires that should be repaired or replaced.
3. Select tires for retreading by factory-tested and proved B.F. Goodrich methods.
4. Set up a proper inflation program.
5. Start you on a program of regular tire rotation and inspection.

B.F. Goodrich *off-the-road tires*

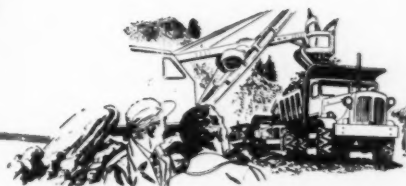
e service keeps you on the go!

- The red dots represent B.F. Goodrich dealers who offer on-the-job tire service. Whether you're at work on the \$50-billion, 41,000-mile Interstate Highway System (black lines), or on any other construction, mine or quarry project, you can be sure of expert, efficient tire service on the job from your local B.F. Goodrich dealer.

CO.,
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aver-
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times.



O'CONNOR CONSTRUCTION CO. is turning an old road into a 4-lane highway in central Illinois, reports B.F. Goodrich tires give 6,000 hours of service, including retreads.



JERNIGAN TRUCKING CO. equipment hauls stone for bridge approaches near Augusta, Ga. The company reports B. F. Goodrich FLEX-RITE NYLON tires have gone over 50,000 miles—an all-time record on this operation.



FULLY EQUIPPED SERVICEMOBILES

—B.F. Goodrich Servicemobiles are equipped with hydraulic crane, pneumatic wrenches, bead jacks and all of the latest power tools and devices for speedy, efficient tire service on the job.

Call
the district
office nearest
you for
B.F. Goodrich
tires and
tire service

Albany, New York	4-7181
Atlanta, Georgia	DR. 8-4561
Baltimore, Maryland	BE. 5-6705
Birmingham, Alabama	FA. 2-0364
Boston, Massachusetts	HI. 4-6100
Buffalo, New York	RI. 1256
Charlotte, North Carolina	EX. 9-5621
Chicago, Illinois	ES. 9-8800
Cincinnati, Ohio	BR. 1-7800
Cleveland, Ohio	PR. 1-0627
Columbus, Ohio	AM. 8-8631
Dallas, Texas	RI. 1-5601
Denver, Colorado	TA. 5-1267
Des Moines, Iowa	CH. 4-7156
Detroit, Michigan	TY. 4-4892
Fargo, North Dakota	5-5597
Grand Rapids, Michigan	GL. 9-9534
Harrisburg, Pennsylvania	CE. 4-5974
Hartford, Connecticut	JA. 5-1186
Houston, Texas	CA. 7-5226
Indianapolis, Indiana	ME. 7-2506
Jacksonville, Florida	EL. 6-4167
Kansas City, Kansas	MA. 1-4400
Los Angeles, California	RA. 3-6692
Memphis, Tennessee	WH. 8-6761
Milwaukee, Wisconsin	DI. 4-5104
Minneapolis, Minnesota	FE. 2-5474
Newark, New Jersey	MA. 2-4422
New Orleans, Louisiana	JA. 2-6341
New York, New York	OR. 9-0330
Oklahoma City, Oklahoma	JA. 5-1587
Omaha, Nebraska	PL. 8133
Peoria, Illinois	3-8583
Philadelphia, Pennsylvania	JE. 5-5800
Phoenix, Arizona	AL. 8-6851
Pittsburgh, Pennsylvania	HI. 1-5200
Portland, Oregon	CA. 6-3621
Richmond, Virginia	EL. 5-8573
Sacramento, California	GI. 1-6127
St. Louis, Missouri	PR. 3-2600
Salt Lake City, Utah	DA. 2-2405
San Antonio, Texas	CA. 7-7543
San Francisco, California	AT. 2-9620
Seattle, Washington	MU. 4300
Spokane, Washington	KE. 5-2036
Syracuse, New York	HO. 3-6645
Wichita, Kansas	HO. 4-6389

Or write **B.F. Goodrich Tire Co.**,
A Division of **The B.F. Goodrich Co.**,
Akron 18, Ohio



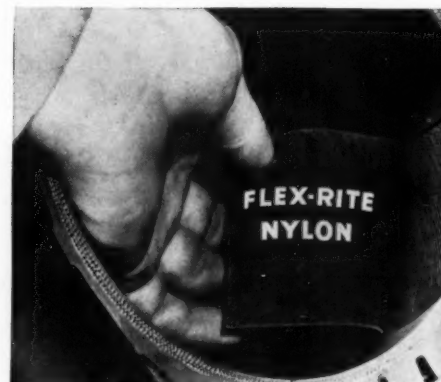
tires and tire service cut operating costs!

FLEX-RITE NYLON cords give you more retreadable tires

More and more contractors are switching to B.F. Goodrich because B.F. Goodrich gives them:

1. Longer-wearing, trouble-free tires, no matter what the job.
2. Complete, on-the-job tire service and fast, expert tire repairing and retreading.

B.F. Goodrich tires wear longer and give you more retreads because of exclusive B.F. Goodrich **FLEX-RITE NYLON**. This cord material withstands double the impact of ordinary materials. It resists heat blow-outs and flex breaks. The result: you get more retreadable tires—and more retreads per tire—with B.F. Goodrich.



FLEX-RITE NYLON cord construction available in all B.F. Goodrich off-the-road tires. It's just one reason why you save money when you see your B.F. Goodrich dealer. He has B.F. Goodrich tire for every off-the-road job.

Specify B.F. Goodrich Tubeless or tube-type tires when ordering new equipment



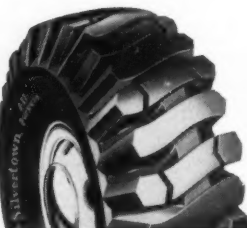
ROCK SERVICE for heavy-duty mine, quarry and dirt-moving work. Tubeless or tube-type. 18.00-24 through 33.5-33.



SUPER TRACTION for power wheels on large dirt-moving rigs. Tubeless or tube-type. 18.00-24 through 27.00-33.



UNIVERSAL for power or free-rolling wheels on trucks, scrapers, trailers. Tubeless or tube-type. 7.00-15 to 24.00-29.



ALL-PURPOSE for all types of equipment working on and off the road. Tubeless or tube-type. 7.50-15 through 12.00-25.



ROCK LOGGER for front or drive wheels in logging and similar heavy-duty work. Tubeless or tube-type. 8.25-20-14.00-24.



EARTH MOVER TRACTION for scrapers, wagons and all types of pulled equipment. Tubeless or tube-type. 11.00-20 to 24.00-29.



Lift the page for complete information on money-saving B.F. Goodrich on-the-job tire service!

Turn the page and see how 6 contractors saved with B.F. Goodrich tires and tire service!

How 6 contractors save with B.F. Goodrich tires



IN ILLINOIS—CKG Associates is at work on the Northern Illinois Toll Road near Elgin. The company operates 115 vehicles, uses B.F. Goodrich FLEX-RITE NYLON Rock Service, Tractor Grader, Earth Mover Traction, Rock Logger and All-Purpose tires. Excellent on-the-job service is one reason they prefer B.F. Goodrich tires.



IN NORTH DAKOTA—This scraper is one of 75 units operated by Northern Improvement Co. on road projects in the Dakotas, Minnesota and Montana. The scraper weighs 35 tons loaded, works 60 to 72 hours a week. The B.F. Goodrich FLEX-RITE NYLON Super Traction tires give 5,000 hours' service before retreading!



IN MICHIGAN—Julius Parath & Son Co. builds roads in southeastern Michigan, uses 105 pieces of equipment including trucks, cranes, dozers and graders. Because much work is in sand, Parath uses B.F. Goodrich FLEX-RITE NYLON 65" Special Earth Mover tires, reports they are "the best tires for this type of work."



IN WASHINGTON—"We switched to B.F. Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Richard M. Ward, Truck Supt. of F. R. Hewett Co., contractors of Spokane, Wash. "They have given us up to 50% more service than the tires we used previously. We have been able to retread them too."



IN FLORIDA—The Ralph E. Mills Company builds roads all over the world. Here the job is grading and filling on the Florida State Turnpike. The company reports B.F. Goodrich FLEX-RITE NYLON Super Traction tires work as many as 3,000 hours, thanks in part to the on-the-job service the local BFG dealer gives.



IN PENNSYLVANIA—Gasparini Excavating Co., Inc., does highway and heavy construction work—here on the Pennsylvania Turnpike. The company finds "B.F. Goodrich FLEX-RITE NYLON tires give over 4 years' service. They minimize breakdowns and impact breaks, give maximum contract performance in the shortest contract period."



Smileage!

Job Talk...



Tractor Handles Two Jobs at Once

Texas earthmoving contractor C. Hunter Strain gets a lot of work from his machines. On a road job near San Angelo, Tex., his Cat D9 rips the cut while it push-loads a Cat DW20.

Strain says he gets a 16-yd payload in 30 to 60 sec with his method. During the pushing op-

eration the ripper teeth penetrate about 6 in. below the surface.

With three Cat DW20's and three Cat DW15 tractor-scrapers, Strain's production goes as high as 8,400 cu yd in a 10-hr day. Haul distances average 3,000 ft; some are as long as 7,600 ft. Material in the cut is Texas caliche.



Assemble Pipe, Then Dig Trench

On a job at Truax Air Force Base near Madison, Wis., C. A. Hooper Co. assembled and tested a complete underground heat distribution piping system on the ground before excavating the trench.

The method eliminated trench maintenance. It also enabled welding crews to work at ground

level with plenty of room, rather than in the bottom of the trench.

The piping is made up of 14-in. dia welded steel casing units with 8-in. inner pipe manufactured by E. B. Kaiser Co. of Glenview, Ill. The contractor lowered half of each 500-ft run at once.

continued on page 40

Get Rugged RAIL PILE



For that extra-tough job, the superior strength of the new Foster Fabricated Rail Pile makes it your best, most economical buy. Drives aside hard obstructions and punches through hardest strata with minimum damage or deflection to pile—with any conventional set of leads and hammers. Available in 40 to 132 lb. per-ft. weights, 28 to 39-ft. standard stock lengths (and up to 100-ft. on order).

Immediate "Faster-from-Foster" deliveries from stock, or promptly fabricated to your exact specifications.

Write or call your nearest Foster office for new Fabricated Rail Pipe Bulletin No. CM-5.



SINCE 1901



COMPLETE CONTRACTOR SERVICE

PIILING • PIPE • RAIL • HIGHWAY PRODUCTS

L.B. FOSTER CO.

PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

announcing the new Manitowoc model 3600 3 yard shovel

ENGINEERED TO MATCH TODAY'S BIGGER HAUL UNITS

Want more digging power, more cycle speed, more output — more *profit* even from low bid jobs? Then you'll want all the facts about the big, *new* Manitowoc 3-yd. Model 3600 shovel. Here is a tough, fast unit with all the modern, big output features you need to make money in today's highly competitive market.

The new 3-yard 3600 is scientifically engineered to match modern haul units.

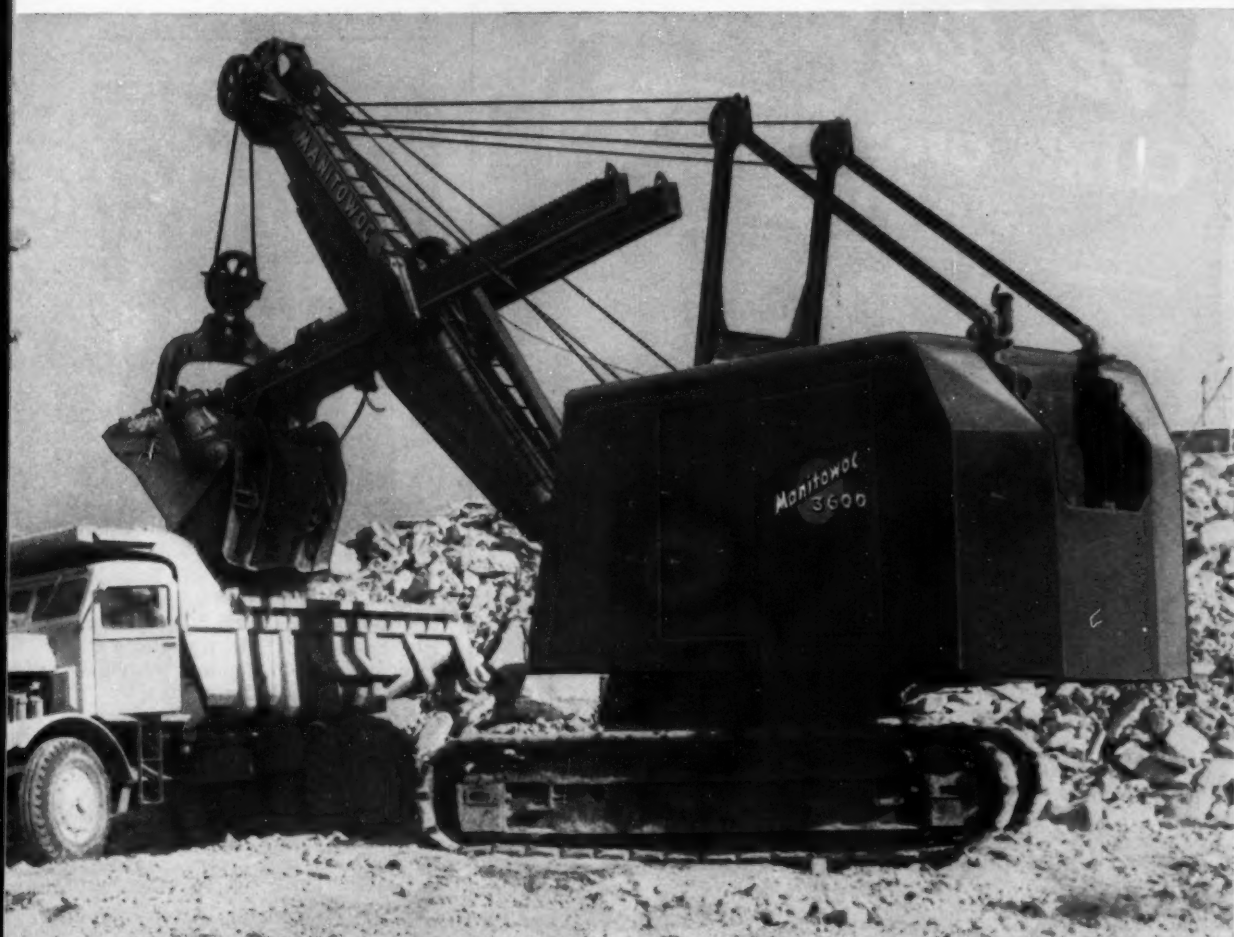
New, high-sided hauling units require a shovel with the correct shipper shaft positioning . . . the exact dipper pitch and shape to provide higher reach and cleaner dumps. Result — faster work cycles and no loading bottlenecks.

The new 3-yard 3600 delivers full power to the dipper. Simple design eliminates power

loss in the gear train . . . increases cycle speed. Here's a big machine in the high capacity class which offers the speed and responsiveness of small capacity rigs. And for smoother power transfer the torque converter system includes a "governor" to maintain rigid control of the infinite variety of power ratios. Line pull and line speed factors are balanced against load resistance, resulting in smooth, powerful operation and long machine life.

The new 3-yard 3600 makes hard jobs easy. Responsive air controls let your shovel runner perform at top efficiency all day without fatigue. Smooth-acting clutches and positive-action brakes respond instantly to the operator's touch even on the toughest jobs.





The new 3-yard 3600 stays on the job longer. Tough, internally reinforced, box-section dipper sticks; a massive shipper shaft; a tubular, alloy boom; a manganese dipper and many other long-life features keep the 3600 working longer with fewer service delays.

The new 3-yard 3600 is quickly convertible to crane, clamshell or dragline operation. You get a smooth-lifting, 65 ton

capacity crane — a big-yardage, long-reach 3-yd. dragline. Simple boom connections make front end conversion in the field fast and easy.

See your Maniwoc distributor now for more facts on the new 3-yard 3600. There are dozens of other profitable features to help you land more contracts. Get more information *today!*

MANITOWOC ENGINEERING CORP.
A SUBSIDIARY OF THE MANITOWOC COMPANY, INC.
Maniwoc, Wisconsin

Maniwoc

MANITOWOC ENGINEERING CORP.
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.



Smith-Field Automatic Curb and Gutter Machine in operation.

at LESS COST

**NO HAND FINISHING!
NO FORMS!**

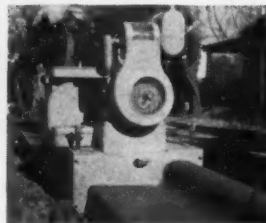
Lay up to 1,200 feet of integral curb and gutter per day — with no forms or hand finishing. The Smith-Field Automatic Curb and Gutter Machine is doing just that for cities, contractors, builders over the world. Savings of time, labor and material mean money on any job anywhere. The Companion machine — Stephens-Canfield Automatic Curber — lays curbing with the same dispatch, reaching as high as 3,000 feet per day.

The Smith-Field Automatic Curb and Gutter Machine uses Portland Cement Concrete. The Stephens-Canfield Automatic Curbers work equally well with either cement or asphalt mix.



TYPICAL MOLD SECTIONS—65 OTHERS AVAILABLE

LEARN about the savings — the efficiency of these machines. Write for full details and prices.



Smith-Field Automatic Curb and Gutter Machine — Model Mark 3



Stephens-Canfield Automatic Offset Curber — Model 56W



Stephens-Canfield Automatic Curber — Model 55A

E. L. HARDIN ASSOCIATES, INC.

SALISBURY, NORTH CAROLINA U.S.A.

SOLE MANUFACTURERS AND DISTRIBUTORS—U.S.A. AND FOREIGN
PATENT NOS. 2,707,422—2,816,790—AND OTHER PATENTS PENDING

3303

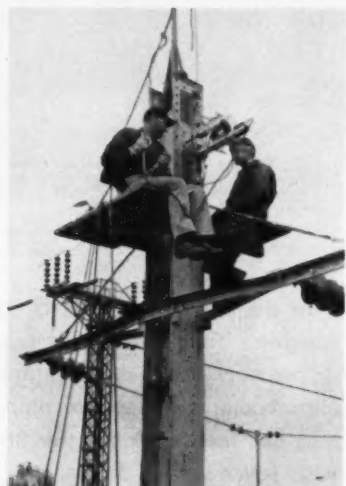
JOB TALK . . . continued from page 37



Pier Shores

Willis, Paul & Proctor, general contractor for a bridge across Wallenpanpack Creek in Pennsylvania, shore beams with 3-ft-wide ladder frames of Trouble Saver sectional scaffolding.

Frames are spaced 3 ft apart to shore beams 3½ ft wide by 4 ft thick. Built-in ladders provide access to handle form work.



Easy Drilling

Workmen of Vare Bros. Construction Co., Ardmore, Pa., take it easy on a job that might have been dangerous and back-breaking work.

The contract called for extensions to about 50 transmission poles to accommodate a new electrical system. It required drilling some 4,000 holes in 14-in. wide-flange steel columns at a height above ground of 30 to 90 ft to join steel extensions to the existing poles.

continued on page 45

**NEW
TD-20**

**NEW
TD-20**

**NEW
TD-20**



*...with NEW
yardage-boosting control*

NEW 134 hp International®

... SIX SPEEDS, FULL

EXCLUSIVE TD-20 "Shuttle-Bar" shifting, forward! Just push the "Shuttle-Bar" forward. "Sweep" the gearshift lever into the "power" gear needed—for full blade, full speed dozing. And you're set for rolling the earth. You have a "heavy-work" gear choice for every need and condition. First gear forward (1.5 mph) gives you 27,500 pounds of push or pull at rated engine rpm!

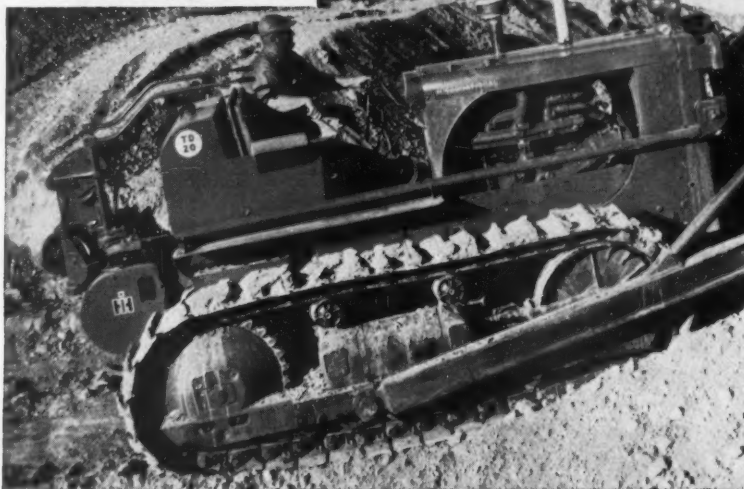
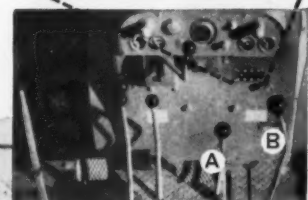
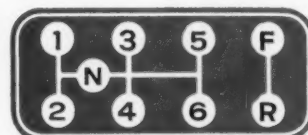


Shift through all six speed ranges with a "single stick"

Reverse direction in any speed range with "Shuttle-Bar"

NEW in work-capacity, the International TD-20 gives you 134 net diesel engine hp. Revolutionary, it gives you exclusive "Shuttle-Bar" control teamed with an exclusive new 6-speed, "single stick" full reverse transmission! New TD-20 cycle-speeding "Shuttle-Bar" control gives you full and instant advantage of six speed ranges, forward or reverse. Never before has big crawler gear-changing and direction-changing been so fast, so easy, so profitable!

Look at the TD-20 control lever grouping! Lever "A" is for shifting gears through any of the six working speed ranges. Lever "B" is the exclusive "Shuttle-Bar" which operates forward-reverse direction-changing — providing six speed ranges forward; six, reverse! Inset view shows the gear shift pattern. Visualize how one quick arm sweep can shift the TD-20 from second to fifth gear and from forward to reverse!



EXCLUSIVE TD-20 "Shuttle-Bar" shifting, reverse! Hundreds of extra cubic yards moved daily can result from TD-20 cycle-speeding shuttling action! Sweep the gearshift lever into the desired travel gear

—pulling the "Shuttle-Bar" back with the same easy arm sweep. And you're set for highballing back for the next push, as fast as 8.4 mph!



TD-20 crawler tractor

REVERSE, "SHUTTLE-BAR" CONTROL

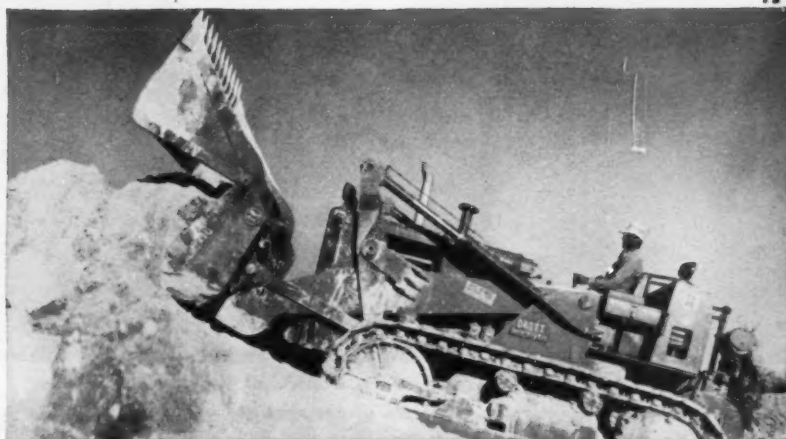
New handling ease and speed
boost daily yardage with

NEW INTERNATIONAL DROTT® TD-20 Four-in-One

Using the International Drott TD-20 4-In-1 in bulldozer position for earthmoving or stockpiling usually calls for returning the unit to "next push" position. For speedy recovery, without "turn-around" or gear-shift delay, you simply use exclusive TD-20 "Shuttle-Bar" shifting! New 7-roller TD-20 4-In-1 track frame gives you a full 109" of track on the ground — for unsurpassed balance and stability.

From the excavation in first or second gear with a 4-ton load of dirt, a TD-20 4-In-1 can climb and dump—and be backing down the ramp for a "refill," faster than any other big loader you ever saw work. Fast dumping and fast "Shuttle-Bar" shifting are the reasons why! For toughest digging, the new International Drott TD-20 4-In-1 gives you a tremendous 46,800 pounds of break-out force!

You can speed up the cycle remarkably — can clip minutes off every truck-load—add hundreds of cubic yards to daily loader capacity. You can do it wherever you can apply shuttle loading teamed with exclusive TD-20 "Shuttle-Bar" shifting! Note how this operator uses exclusive 4-In-1 clamshell bottom dumping—for fast action and positive clean-out of sticky materials! New full-flow hydraulic system filter protects precision hydraulic parts indefinitely.



AND NOW, teamed with the NEW TD-20



THE MIGHTY TD-24 gives you **175** Planet-Power steered drawbar horsepower !

Now, the mighty International TD-24 becomes the most powerful gear-drive crawler in its size class—with 175 full-capacity working drawbar horsepower.

Now, you get 41,130 pounds of Planet Power-controlled pull at rated rpm. Nothing else on tracks gives you this positive load control! You get full-measure, full-time live power on both tracks — to handle the same big loads on turns as on the straight-aways.

Increased horsepower is matched by new power train strength—a widened, strengthened sprocket drive

gear and pinion — for long life under tough working conditions.

Watch the TD-24 perform from the operator's seat and compare profit-production of the TD-24 to any other gear-drive, king-size crawler. See what a major part Planet Power steering has in increasing dozing, pushing, and pulling profits. See your International Construction Equipment Distributor for a new TD-20 or TD-24 demonstration!

Exclusive combination of foot decelerator for feather-touch contact—Hi-Lo power shift for a speed-away send-off—high reverse for super-fast return to the push-starting point—makes the 175 hp TD-24 unequalled as a pusher!



**International[®]
Construction
Equipment**

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

It would have been heavy labor to push a drill bit through $\frac{3}{4}$ -in. steel several dozen times a day. And such heavy work from a precarious perch close to high-tension wires obviously would have been dangerous.

Vare Bros. solved the problem with Black & Decker $1\frac{1}{4}$ -in. magnetic drill presses that fasten the drills firmly to the steel walls of the poles, relieving the operators of the burden of supporting them. A trigger switch turns the magnetic power on and off, and a safety chain supports the unit when moving from hole to hole.



Busy Hoist

DeWitt, Furnell, and Spicer, general contractor for a new office building in Tampa, Fla., pour 20 to 30 yd of concrete per hr with a Buck Hoistower equipped with a self-dumping concrete bucket.

Job superintendent Bud Frances says they have used the Hoistower to heights above 100 ft. It also hoists other materials.

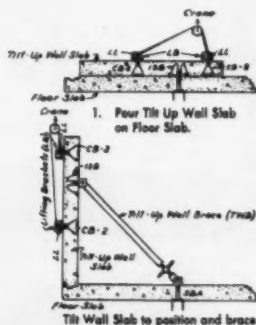
Precast Concrete Components Lifted and Placed With

Richmond Lifting Inserts

Certified laboratory tests assure proper strength rating for efficient design and performance in concrete at usable strength

Richmond has developed and tested a complete line of Lifting Inserts and accessories for handling and placing of precast concrete wall slabs, columns, beams, girders, piles, etc.

No matter what type of precast units are involved, Richmond can supply exactly the right type of insert for the specific job.



These units are designed with adequate extra strength and for simple operation in lifting and bracing precast concrete components.

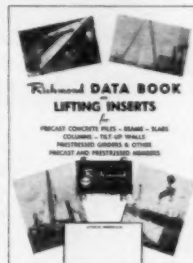
RICHMOND SCREW ANCHOR COMPANY, INC.

816-838 Liberty Ave., Brooklyn 8, N. Y.
or 315 South Fourth St., St. Joseph, Mo.



Precast wall slab being tilted into place by means of Richmond Lifting Inserts and Lifting Brackets.

Send for your copy of the Richmond Data Book on Lifting Inserts giving complete technical data, dimensions, working loads and ultimate strengths in various strengths of concrete. At the same time ask for your copy of the latest Richmond Handbook showing the complete line of form tying anchorage and accessory devices for concrete construction backed by 47 years in this field.

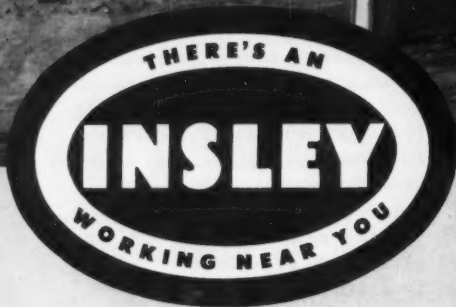


what's behind the boom in bridge building?

Behind *this* boom and many other booms that are helping expand and modernize America's highways, you'll find an Insley crane. What's behind Insley's popularity?

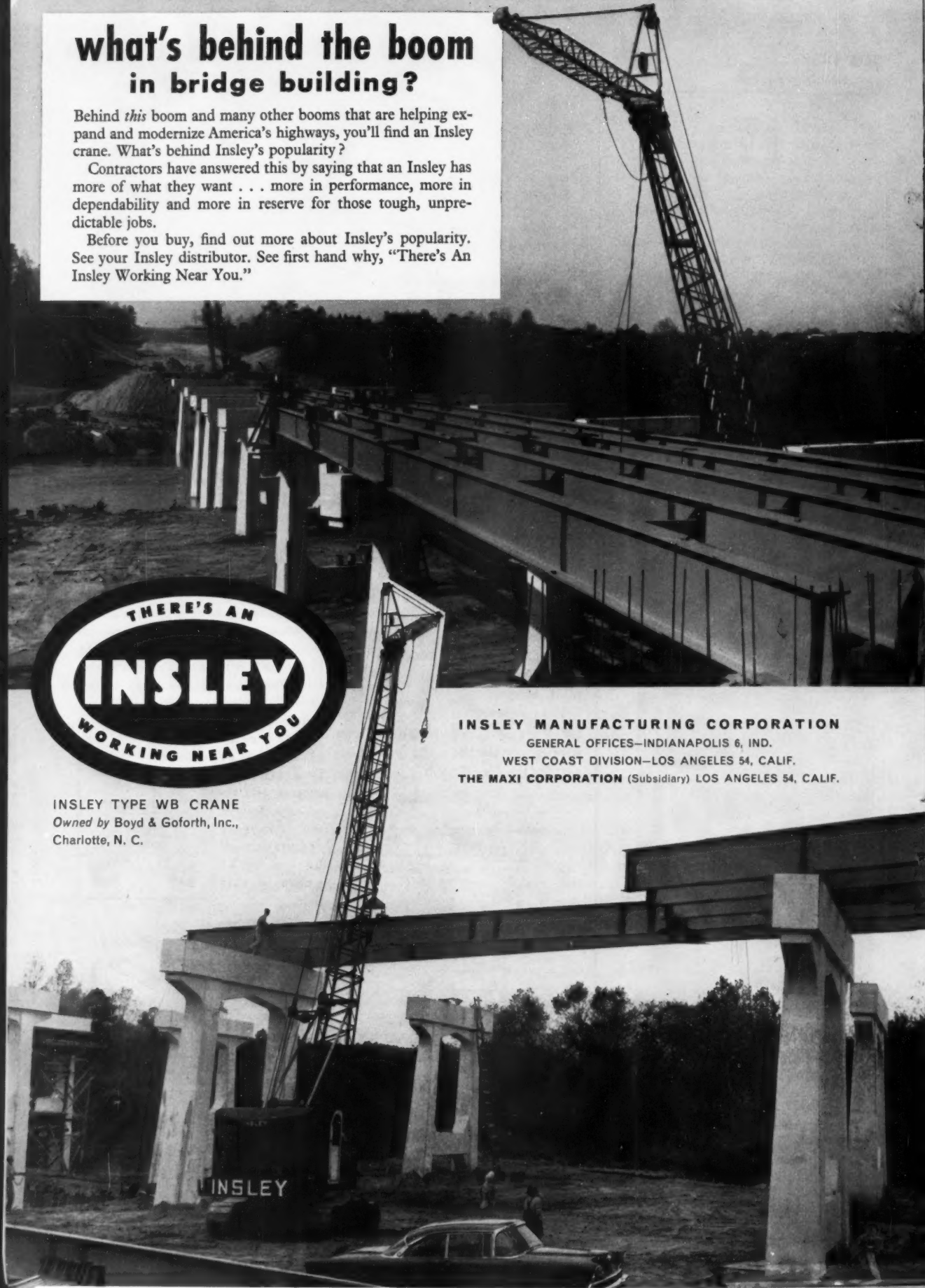
Contractors have answered this by saying that an Insley has more of what they want . . . more in performance, more in dependability and more in reserve for those tough, unpredictable jobs.

Before you buy, find out more about Insley's popularity. See your Insley distributor. See first hand why, "There's An Insley Working Near You."



INSLEY TYPE WB CRANE
Owned by Boyd & Goforth, Inc.,
Charlotte, N. C.

INSLEY MANUFACTURING CORPORATION
GENERAL OFFICES—INDIANAPOLIS 6, IND.
WEST COAST DIVISION—LOS ANGELES 54, CALIF.
THE MAXI CORPORATION (Subsidiary) LOS ANGELES 54, CALIF.



NOW TRANSISTORIZED

power supply speaker microphone

MOTOROLA T-POWER 2-WAY RADIO



Improved Performance with Lower Operating Cost

Already famous for the lowest maintenance and operating costs in the mobile 2-way radio field, Motorola radio is an even better investment now—with T-POWER. The vibrator is gone! . . . replaced by rugged, long life transistors. Reduced "down-time", lower maintenance, and greatly improved performance all result from this new development. The transistorized POWER VOICE Speaker is 10 times more powerful than conventional speakers . . . talks *through* noise and can be heard hundreds of feet away from the vehicle. The transistorized Dynamic Microphone gives unprecedented voice clarity and greater communications range.

New Mounting Flexibility with Plug-In Control Head . . . Same Basic Unit can be Used for Front or Trunk Mounting

With the T-POWER radio you are no longer restricted to one type of mounting. Install the complete radio, with drawer unit and plug-in control head, for under-dash mounting. For rear mounting, the same basic drawer unit can be installed in the trunk and connected by cable to a dash-mounted control head. And—the same basic drawer unit can be interchanged with the equivalent Motorola Twin-V trunk mount models operated from a 12-volt negative ground source.

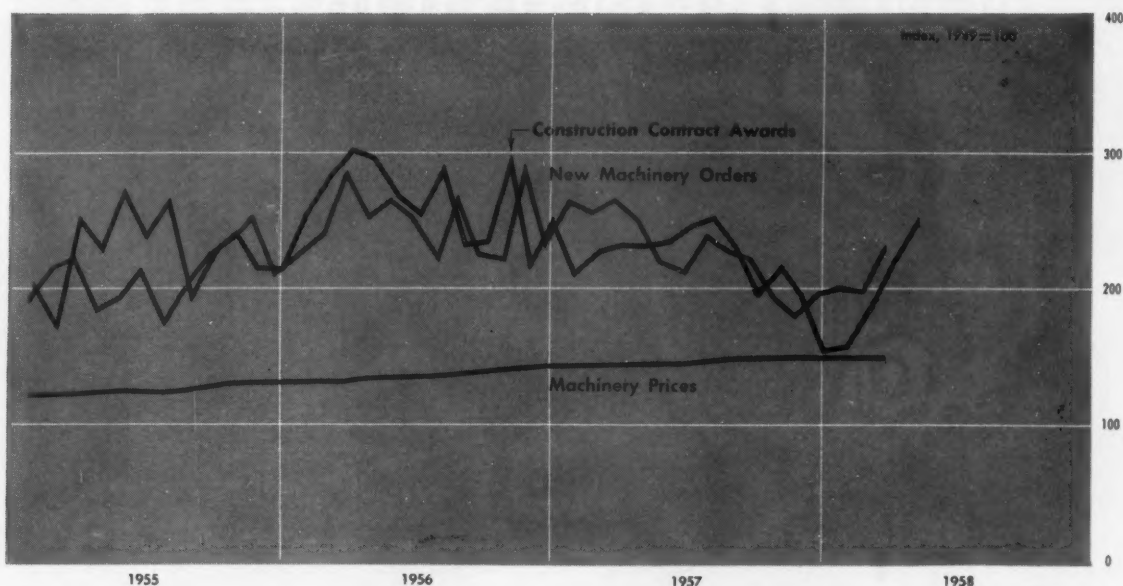
Get all the facts. Write now for literature with complete information.



Transistorized Power
Supply for receiver and
25-watt transmitter.

MOTOROLA Communications & Electronics, Inc. • 4501 Augusta Blvd., Chicago 51, Illinois • A Subsidiary of Motorola, Inc.

Trends in the Machinery Market



Price Index

	MAR 1958	MONTH AGO	YEAR AGO	PERCENT CHANGE 1957-1958
All Types of Equipment	165.4	165.6*	156.8	+ 5.5
Cranes, Draglines, Shovels	163.1	162.9*	158.0	+ 3.2
Shovel, 1/2 cu yd	153.7	153.7	150.3	+ 2.3
Shovel, 3/4 cu yd	167.4	167.4	160.2	+ 4.5
Shovel, 1-1 1/2 cu yd	175.8	174.3	167.9	+ 4.7
Shovel, 2-2 1/2 cu yd	153.9	153.9*	141.3	+ 8.9
Shovel, 3-3 1/2 cu yd	162.7	162.7	154.1	+ 5.6
Shovel, 6 cu yd	179.5	179.5	170.9	+ 5.0
Crane, truck mounted	164.2	164.2	161.0	+ 2.0
Crane, tractor mounted	135.1	135.1	126.6	+ 6.7
Bucket, clam shell	152.7	152.7	152.7	0
Bucket, dragline	180.8	180.8	180.8	0
Scrapers and Graders	158.8	158.8	148.9	+ 6.6
Scraper, 4 Wheel, 8-10.5 cu yd	155.0	155.0	145.2	+ 6.7
Scraper, 4 Wheel, 12-15 cu yd	151.3	151.3	140.6	+ 7.6
Scraper, 2 Wheel, 14-18 cu yd (a)	122.7	122.7	113.6	+ 8.0
Grader, heavy duty	164.0	164.0	154.1	+ 6.4
Grader, light & medium	161.2	161.2	152.2	+ 5.9
Tractors (non-farm, incl industrial)	180.5	180.9*	168.9	+ 6.9
Wheel-type, off-highway (a)	128.4	128.4	118.6	+ 8.3
Crawler-type, 45-60 dhp	182.6	182.6	171.9	+ 6.2
60-80 dhp	185.8	185.8	174.8	+ 6.3
80-120 dhp	186.6	186.6*	172.3	+ 8.3
120 and up dhp	191.8	191.8	178.0	+ 7.8
Machinery, Tractor Mounted	161.7	161.7	154.3	+ 4.8
Dozer, cable controlled	151.6	151.6	149.0	+ 1.7
Dozer, hydraulic controlled	177.3	177.3	169.8	+ 4.4
Cable power control unit	147.9	147.9	136.6	+ 8.3
Loader, shovel type	153.9	153.9	146.5	+ 5.1
Specialized Machinery	150.7	150.7*	142.5	+ 5.6
Ditcher	154.1	154.1	151.8	+ 1.5
Roller, tandem	193.2	193.2	172.8	+11.8
Roller, 3 wheel	161.6	161.6	148.6	+ 8.7
Ripper and rooter	143.4	143.4*	132.8	+ 8.0
Dewatering pump, 10 M gph	111.7	111.7	108.1	+ 3.3
Dewatering pump, 90 M gph	144.3	144.3*	133.3	+ 8.3
Portable Air Compressors	159.1	159.1	146.2	+ 8.8
Contractor's Air Tools	164.5	164.5*	150.0	+ 9.7
Mixers, Pavers, Spreaders	149.2	149.2*	142.3	+ 4.8
Mixer, portable, 6 cu ft	151.5	151.5	144.1	+ 5.1
Mixer, portable, 11 cu ft	160.1	160.1	151.7	+ 5.5
Mixer, portable, 16 cu ft	163.7	163.7	153.6	+ 6.6
Mixer, truck, 6 cu yd	128.1	128.1	122.1	+ 4.9
Mixer, paving, 34 cu ft	185.2	185.2	166.8	+11.0
Concrete finisher & spreader	173.0	173.0	166.3	+ 4.0
Bituminous distributor	122.3	122.3*	115.9	+ 5.5
Bituminous spreader	160.3	160.3	160.3	0
Bituminous paver	153.0	153.0	149.8	+ 2.1

* A Index based on January, 1955 = 100 ** Revised
BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49 = 100

Contract Rise Spurs Machinery Purchases

The upsurge in heavy construction contract awards continued in April. And March orders for construction machinery moved up sharply, reflecting increases in February and March contract awards.

April's contract award volume increased 13% above March—the fourth consecutive monthly rise. Moreover, the contract award index shows that April's volume came within a whisker of matching last July—top month of 1957—and exceeded April, 1957, by more than 8%.

The upturn in new construction contracts prompted contractors to step up their machinery orders in March. The orders index rose to 232, based on 1949's rate of orders as 100. This represented a 16% gain over February orders and was the biggest volume of buying since July, 1957, according to the McGraw-Hill Department of Economics index.

Although contractors bought less machinery in March this year than last, the gap narrowed to 13%, compared with drops of 24% in January and 22% in February.

Machinery Prices Steady

Manufacturers' prices of construction machinery held steady between February 15 and March 15, according to the US Bureau of Labor Statistics index.

There have been few changes in machinery prices since October, 1957. The March 15 BLS index is 165.4, based on 1947-49 prices as 100, about the same as the 164.9 value for last October.

Prices will probably hold where they are for several months. Some manufacturers have inventories on hand now which amount to months of shipments at the recent rate of new orders.



MARINE FENDERS



Takes Rock and Roll without a Toll!

An ocean liner is brought alongside the dock. What if her immense tonnage is pressed a bit too hard by the wind or tide? That could mean heavy damage to the ship and the dock. That is, unless the dock is equipped with U.S. Rubber Marine Fenders.

These rugged shock absorbers stand up to the most crushing batterings, impacts and squeezings. They are perfect cushions that protect docks and ships against impact loads; also used as mats on tugboats, as bumpers

on loading platforms, as guard posts in parking lots.

SEND for our technical catalog. It contains marine fender dimensions, shock absorption data and other engineering facts which enable the engineer to write in marine fender specifications and materially reduce construction costs, both new or for modernization. Write Department CM&E, Mechanical Goods Division, United States Rubber, Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.



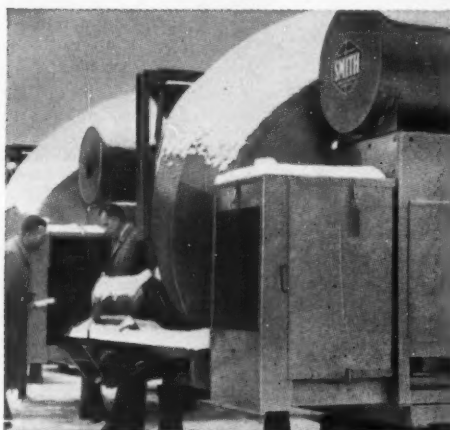
Mechanical Goods Division

United States Rubber

See things you never saw before. Visit U. S. Rubber's New Exhibit Hall, Rockefeller Center, N. Y.

**why
T. L. Smith Co.
powers with
Chrysler
Industrial
Engines**

T. L. SMITH EXECUTIVES, Richard R. Kupfer, Director of Purchases (left); Raymond W. Mueller, Project Engineer, inspect Chrysler Ind. 30 Engine which powers all T. L. Smith separate engine mixers—nine models, 5 to 9 yard capacity.



SEND for 1958 CHRYSLER INDUSTRIAL ENGINE CATALOG:
Dept. E5, Industrial Engine Division, Chrysler Corporation,
Detroit 31, Michigan.

Chrysler
INDUSTRIAL ENGINES

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

Ready-mix concrete mixers demand rugged power. Most work, for example, is off the road and the mixer engine is subjected to severe jolting and sudden load shifts. The engine is also forced to operate in an atmosphere of abrasive cement dust. The engine is required to turn drum loads ranging up to 40,000 lbs. Operating speeds fluctuate suddenly from 2400 rpm during loading to 800 rpm during agitation.

T. L. Smith Co. has found that Chrysler Industrial Engines are engineered and built to meet these rugged demands better than any other engine in the field. Chrysler's fluid coupling, for example, absorbs sudden load shocks, prolongs engine life. Chrysler's efficient oil-bath air cleaner keeps harmful cement dust from fouling the engine. Chrysler Engines have also proved able to operate at continuous low speeds under heavy loads for long periods without excessive carbon build-up. Most important, Chrysler's day-in, day-out dependability means minimum down time for T. L. Smith customers. In fact, many Chrysler-powered units which are still on the job after six and seven years have never had a major maintenance problem.

GYRO-FLO *in the news*



Truck-Mounted Drilling Rig Helps Contract Driller Meet Deadline Dates

"Take a highway truck chassis, add a 900-cfm Gyro-Flo compressor and two I-R Hydra-Boom units equipped with two D45, 4½" Bore drifter drills, and you're in business with the fastest contract-drilling unit you ever saw." So says an official of the New Jersey Drilling Co., who admits that this is a slight oversimplification. "Some planning and good design went into this rig, too. The I-R distributor and sales engineer sure did a fine job on this rig."

The truck-mounted drilling rig shown here has lived up to his every expectation—helped him finish up faster and meet the tightest deadlines with a minimum of man-hours and drilling expense.

GYRO-FLO 900 PROVIDES AMPLE AIR POWER

A standard 900-cfm Gyro-Flo rotary portable compressor, less running gear, was mounted on a 6-wheel highway truck chassis. There was plenty of room available to mount two Hydra-Boom drills. The completely self-contained compressor provides ample air power for any job—will run both heavy-duty drills simultaneously at full pressure. The rig can move from job to job at a moment's notice and at maximum highway speeds. A frame above the compressor holds the drill towers while in transit.

HYDRA-BOOMS CONVERT SETUP TIME TO DRILLING TIME

With two heavy-duty I-R D45 rock drills mounted on Hydra-Booms, the New Jersey Drilling Co. can set up to drill any type of hole patterns in a matter of minutes. All drill-tower motions, including power dump and swing and power cone, are controlled by the touch of a throttle. Husky hydraulic cylinders, five for each drill, have completely replaced the time-consuming muscle power formerly required to set up for each hole.

Ask your Ingersoll-Rand representative to show you how Gyro-Flo compressors and I-R rock drills can help speed your drilling work, with important savings in cost per foot of hole.



Ingersoll-Rand
2-835 11 Broadway, New York 4, N. Y.

AN UNBEATABLE COMBINATION . . . GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

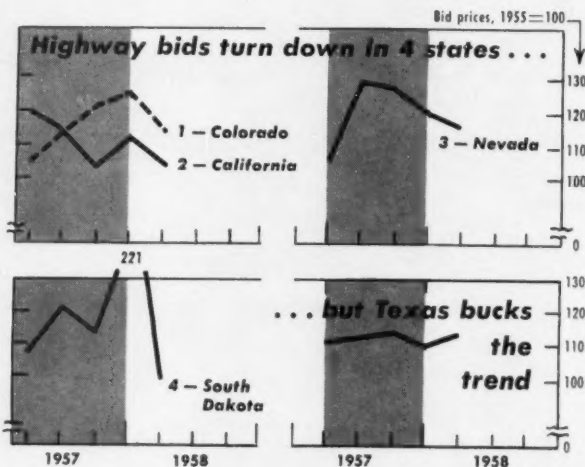
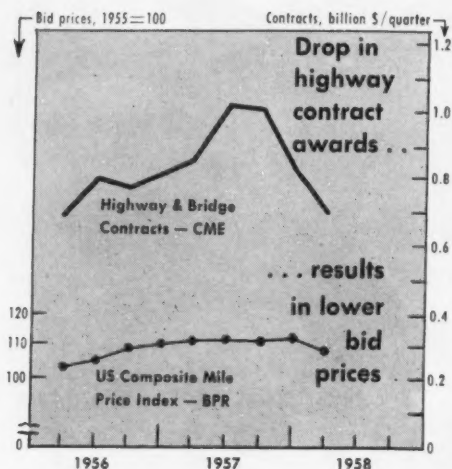


▲ High holes, horizontal or at any angle, are no problem at all with this truck-mounted drilling rig. Operator at the control station can "spot" the drill anywhere he wants at the touch of a throttle.

▼ Photo below shows that toe holes are "duck soup" for this Gyro-Flo 900 and Hydra-Boom combination.



Construction Business...



Highway Bid Prices Turn Lower

CONTRACTORS are trimming their bids on highway projects to meet the challenge of stiffer competition for available new work and because prices of several construction materials are easing.

Moreover, the outlook for materials prices during the rest of this year is for greater stability than at any time in the last three years. This means that contractors are no longer bidding into a rising trend of materials prices. The same applies also to the construction machinery price trend. In fact, only labor costs remain a major question mark when contractors provide allowances in their bids for future cost increases during the life of a new construction contract. But even here an increasing number of long-term labor contracts—3, 4, or 5 years in length—gives a good idea of the pattern of wage increases that can be expected during the contract life.

State highway department indexes flash the changing trend. Bid prices turned down in the first quarter in California, Colorado, Nevada, and South Dakota, according to reports to Construction Methods by these highway departments. Texas is the only state reporting a first quarter increase in prices bid on state highway projects.

Further evidence of the down-trend in highway bids comes from the U.S. Bureau of Public Roads which reports its Composite Mile Bid Price Index for federal-aid highways declined 2.1% below the last quarter of 1957. This is the first decline in the BPR index since the second quarter of 1955 (though this index held relatively steady during the last nine months of 1957.)

The turnaround in bid prices was triggered by a sudden drop in highway contracts in the last three months of 1957, a decline that continued during the first quarter of this year. Contracts reported by Construction Methods slacked off after hitting a record pace of more than \$1 billion in both the second and third quarters of last year. The awards total skidded to \$845 million in the fourth quarter 1957 and then tumbled to \$721 million in the first three months of this year. This recent total is lowest quarterly contract volume since early 1955.

Because the amount of new work coming up for bids shrank, as measured by the contract figures, there was a corresponding increase in the number of bidders per project. This increase in competition precipitated the drop in bid prices reported by four

states and the Bureau of Public Roads.

Will the Decline Continue?

Will the drop in bid prices continue in the second quarter? Chances are it won't. The main reason for arguing against a further decline is that the recent drop in awards was temporary. Highway contracts are expected to make a major comeback in the second quarter. Moreover, awards for the April-December periods should top the corresponding nine months of 1957 by perhaps 20% or more. This will ease the competitive pressure that is now coming to a head because of the reduction in total amount of work under way.

But on the other hand, greater stability in materials and machinery prices, plus the considerable unused capacity of roadbuilding contractors should offset the pressures that the greater volume of work coming up for bids might exert to turn the bid price trend upward once again.

Why will awards increase sharply during the rest of this year? There are two reasons. First, more federal funds have been authorized to bolster the supply of money available to pay the federal share of ABC and interstate road construction; sec-

"A plenty tough job so we called on Caterpillar equipment for this one"



South of Camarillo, Calif., J. E. Haddock, Ltd., is relocating and improving 5 miles of U.S. 101. Some 1½ million cu. yd. of rock are being moved, 7,000 cu. yd. on an average day. Three Caterpillar DW21-Athey PR21 rigs help, carrying 18 cu. yd. apiece. The round trip is a mile, including a 12% grade.

"This job is plenty tough," says Neal E. Saul, project superintendent, "so we called on Caterpillar equipment for this one. Caterpillar gives us satisfactory service with a minimum of down time."

Now Athey PR21 Rear Dump Trailers are powered by new Cat DW21 (Series D) Tractors. They feature new Super-Turbo Engines that provide 320 HP (maximum output) and twice as much torque rise as before! Results: faster cycles, greater production —for you.

Other features, as articulated design and non-stop 90° turns in 33½-ft. diameter, let the DW21-PR21 maneuver in crowded, cramped quarters. Three-stage, double-acting hydraulic rams, 60° tilt and

straight body interior permit fast, clean dumping. The PR21 is 14 ft. 1 in. long, 9 ft. wide, allowing fast, easy shovel loading. Below are other Athey trailers suited to construction work.

The complete trailer line of Athey is available through your Caterpillar Dealer. Let him demonstrate on *your* job the hauling unit that's best suited to your requirements.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**THE ONLY COMPLETE
TRACTOR-TRAILER LINE...
BY THE LEADERS**



DW20-PW20, 40-ton capacity, speeds to 35.8 MPH. Exclusive 3-door, bottom dump design and high arch axle minimize dumping resistance.



"PR" Series — rear dump. Available for the DW21 (above), DW20 (34-ton cap., 23-second dump), DW15 (22-ton cap., speeds to 37.2 MPH, 13-second dump).



"PD" Series — side dump. Available for the DW20 (30-ton cap.) and DW15 (20-ton cap.). Both have 70° dumping angle and can dump on the run.

ond, the big roadbuilding states like New York, California, Ohio, Illinois, Michigan, and Texas are getting a bigger share of future allocations for interstate roads because of changes in the allocation formula.

These two developments add up to more funds, especially needed by the larger states if they are to move ahead with their federal-aid highway contracting plans at a faster clip. The record

contracting plans of state highway departments across the country will come closer to fruition.

States Cite Competition

Nevada's state highway department reports that 2.2% decrease in its first quarter highway bid price index "reflects keener competition among contractors . . . An average of 8.8 contractors placed bids in the last quarter as against an average of only 7 a

year ago." Competition was stiffest for the larger jobs led by Nevada. There were an average of 12 bidders for the two contracts costing from \$250,000 to \$500,000, and an average of 11 bidders on the two projects costing over \$1 million each.

The California Division of Highways also attributes the 7.7% first quarter drop in its highway bid price index to sharpening competition. It reveals an average of 9.3 bidders per project during January-March, compared with 8.8 per job in the fourth quarter of 1957 and an average of 7 in the first quarter a year ago. The division notes that the smaller total number of contracts under way may have contributed to making bidding more competitive.

There are signs of some easing in the race to sign up new highway jobs. The average number of bidders per project moved down from a high of 11.6 in January to 9.2 in February and 7.6 in March, though each of these months ran higher than the same month of last year.

Colorado and South Dakota report the sharpest break in highway bid prices. The Colorado highway department's price index dropped 9% in the first quarter to a point 11% under its record high reached in the second quarter of last year. However, the latest index value is still 8.4% above the first quarter of 1957.

South Dakota's highway bid price index fell 54% in the first quarter. But this is a distortion of the trend because the fourth quarter index was pushed up through the roof by high unit prices for small quantities on only two contracts let by the department during the October-December period.

Other states' also report an easing of the bid price trend although their first quarter indexes are not available. Connecticut's semi-annual index dropped 9% between July and December, 1957. Wyoming's annual index for 1957 was 3.3% under its 1956 value.

The one state so far reporting a trend to higher bid prices in the first quarter of this year is Texas. Its index increased 2.2% over the final quarter of last year. However, the Texas enjoyed relatively steady bid prices during the past 18 months, whereas prices in other states were gen-

continued on page 58

Built by Barco Mfg. Co.,
Barrington, Illinois

you get full time
POWER
on rough,
tough,
dirty,
jobs
when it's
WISCONSIN-POWERED

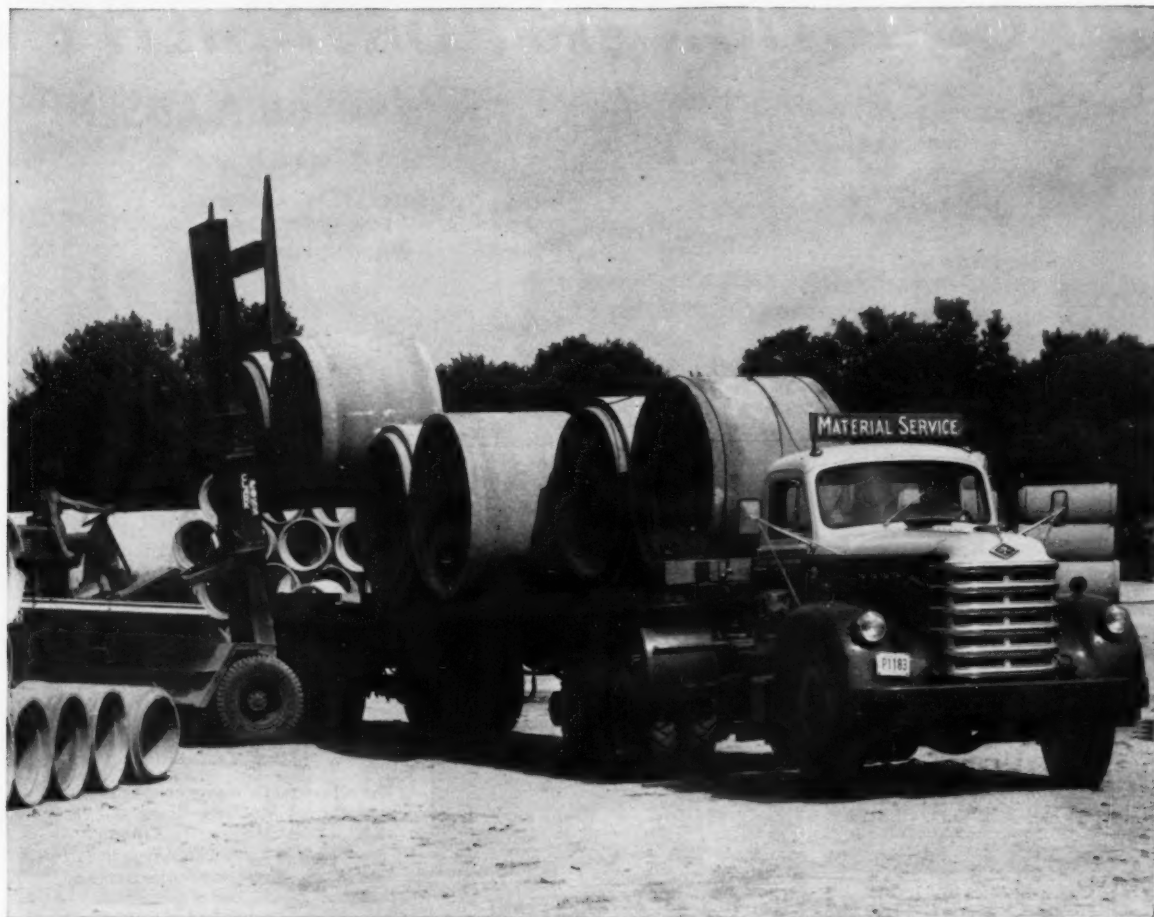
• Powering a tamper is one of the roughest, toughest jobs in the construction field for any engine. Tampers, such as these, strike surfaces with forces up to one ton . . . as many as 2400 times a minute. The engine must absorb vibration and shock. Rugged, built-for-punishment features and overall heavy-duty design are reasons why Wisconsin Engines power these tampers.

For example, tapered roller bearings at both ends of rugged steel forged crankshaft absorb all thrusts. And the air-cooling system of a Wisconsin Engine is designed for *all-weather workability*. One simple casting, a part of the flywheel itself, provides continuous, correct cooling *always* on all Wisconsin Engines.

It will pay you to specify Wisconsin Engines for tampers and all other equipment, too, 3 to 56 hp. Write for bulletin S-223 describing all models.

MOST
HOURS

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN



Geared by FULLER...

New Diamond T's for Material Service Corporation

Hauling heavy loads into sandy, muddy construction sites is daily routine for Material Service Corporation. This well-known Chicago area supplier of construction materials and concrete products knows what this work requires of trucks: *heavy-duty components throughout!*

That's why Material Service specified Fuller 5-A-65 Transmissions in the recent purchase of Diamond T Model 830-32M Trucks.

Fuller Transmissions are designed for long and satisfactory service . . . for heavy loads, steep grades and the stress of constant shifting. Specify Fuller Transmissions wherever the "going's tough" . . . to deliver maximum horsepower through the *right* gear ratios . . . to speed work cycles at lowest cost! Get the facts from your truck manufacturer or truck dealer . . . or write Fuller Manufacturing Company for details.

Material Service Corporation's new Diamond T 830-32M's feature Fuller 5-A-65 Transmissions and Eaton-Hendrickson Tandems. Concrete pipe being loaded is typical of loads carried by this well-known construction material supplier.



FULLER MANUFACTURING CO. Transmission Division • Kalamazoo, Mich.

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.

"PRODUCTION and PORTABILITY" ..Sold us on MADSEN"

says —

**INTERSTATE AMIESITE
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BIG BUT PORTABLE — THE MADSEN MODEL 481 ASPHALT PLANT HELPS YOU MAKE MORE PROFITS OVER THE SEASON ON EVERY JOB

Ability to turn out greater tonnage hour-after-hour plus 100% portability have made the MADSEN Model 481 Asphalt Plant ideal for today's fast-moving highway jobs.

The 481 is oversize throughout including larger elevator, screen, bins, weigh-box, mixer and drives. It is built in 4000-lb., 5000-lb. and 6000-lb. batch capacities. All air operation of bin gates, weigh-box, asphalt injection and mixer gate help to make this plant fast and easy to operate. Fully automatic operation is optional. Features such as the exclusive MADSEN roll-away weigh-box assembly and the externally removable liner sections of the MADSEN Twin-Shaft Pug Mill Mixer... assure easy, low-cost servicing and maintenance.

These are just some of the money-making advantages you get in the MADSEN Model 481 Asphalt Plant. Why not get the complete story on this big capacity, portable plant today.



Equipment that Serves.

North, South, East or West... There's a MADSEN Distributor near you to serve you. And, for your convenience MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio.

MADSEN MODEL 481 ASPHALT PLANT

Ask your MADSEN Distributor for Catalog No. 800-A or write MADSEN Works
Baldwin-Lima-Hamilton Corporation P.O. Box 38, La Mirada, California

**THE MADSEN LINE OF PRODUCTS
FOR THE ASPHALT PAVING INDUSTRY**

**ASPHALT PAVING PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTOR UNITS
ROAD PUG TRAVEL-MIX PLANTS • WEIGH BATCHERS • SUPER FLOAT AND JOHNSON FLOAT FINISHERS
ASPHALT TANKS • ROYAL CROWN PUMP VALVES • ASPHALT AND FUEL PUMP UNITS**



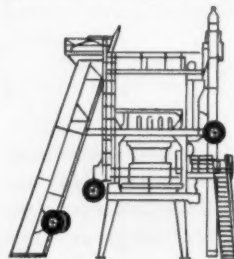
MADSEN WORKS
BALDWIN-LIMA-HAMILTON

CONSTRUCTION EQUIPMENT DIVISION

DIVISIONS: Austin-Western • Eddystone •
Electronics & Instrumentation • Hamilton •
Lima • Loewy-Hydropress • Madsen • Pelton
• Standard Steel Works

This successful Delaware contractor operates the MADSEN Model 481 4000-lb. Batch Capacity Asphalt Plant shown above at Port Allegany, Pa. On a recent highway job plant produced 25,000 tons of bituminous mix with a daily production rate up to 1500 tons. Compact, unit-construction and complete portability enables owner to quickly dismantle plant, move and set up again... where the big jobs are.

• If desired, screen bin unit, mixer weigh-box section and hot stone elevator may be wheel-equipped at the factory or in the field, as shown below.



He tested them all

...then bought an Allis-Chalmers HD-6G tractor shovel



Don Nourse, a leading swimming pool contractor, rented tractor shovels until he found one that appealed to his operators, his sales force and company officials. Choice of all concerned—the HD-6G.



HD-6G
72 net hp
1½-yd bucket
19,600 lb

A heaping 1½-yd bucket comes out of the excavation for a 25 x 60-ft pool. There was time before lunch to start work on a wading pool.

Look ahead...move ahead
...and stay ahead with

ALLIS-CHALMERS

Here's why the HD-6G is everybody's favorite at Fiesta

Talk first with Don Nourse, President of Fiesta Pools, Southgate, California, to find how the Allis-Chalmers HD-6G came to be selected as Number 1 production machine. Don's company is the nation's second largest swimming pool builder. Don tells how Fiesta rented tractors before buying their own unit. After trying them all, he's convinced there is nothing available to touch the HD-6G for excavating pools.

Jack Sweitzer runs the HD-6G And he's convinced it's the best machine he's ever been on. Jack now digs an average of two pools a day—and that's *double* the capacity of any excavating equipment they used in the past.

Roy M. Pederson, Vice-President responsible for sales at Fiesta, will tell you their new HD-6G has already added to company sales volume because of its ability to increase production.

Robert E. Franks, Vice-President and Production Manager, says their HD-6G is the first of several purchases of Allis-Chalmers machines. In his opinion, it has proved itself a great asset on their type of operation.

If you're not already using an Allis-Chalmers tractor shovel, you'll be convinced the HD-6G can do the best job for you when your dealer shows you one—in *action—on your job*. Call him today! Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



CONTINENTAL

"S" Assemblies Save Money

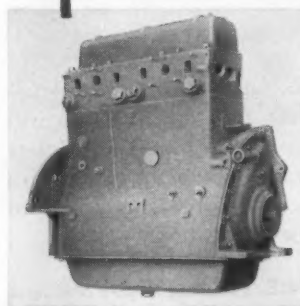
in the

CONSTRUCTION

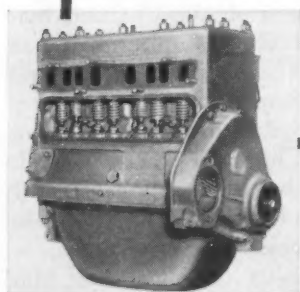
INDUSTRY

Good news for every user of construction equipment with Continental power! All models in the Continental line of industrial engines are now available in "S" Assembly form—basic engine unit complete with cylinder-and-block assembly, oil pan, cylinder head, piston and valve assemblies, crankshaft, camshaft, gear cover, bearings and caps, crank and cam gears and front end plate, fully assembled and torqued to specifications.

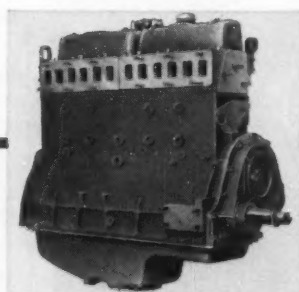
"S" Assemblies usually cost less than full overhaul, and they install in a fraction of overhaul time. And since the "S" Assembly embodies the latest results of Continental's continuing research, as regards both materials and design, it enables you to keep the very latest model on the job at all times.



DIESEL



L-HEAD



OVERHEAD VALVE

ASK YOUR EQUIPMENT DEALER ABOUT "S" ASSEMBLIES
OR WRITE THE FACTORY FOR INFORMATION



Continental Motors Corporation

MUSKEGON • MICHIGAN

8 EAST 45TH ST., NEW YORK 17, NEW YORK • 3017 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6718 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.

CONSTRUCTION BUSINESS ...

continued from page 54

erally moving upward. In that period, the Texas index moved within a narrow range of less than three points. The latest quarterly value of 109.2 (based on 1949-53=100) is about 1% under the record reached into the third quarter of 1957.

Excavation, Steel, Concrete Prices Down

Lower bid prices for excavation, reinforcing steel, and concrete items generally accounted for the first quarter declines in California, Colorado, Nevada, South Dakota, and the Bureau of Public Roads bid price indexes.

Prices of liquid asphalt and plant-mix surfacing were down in Nevada and South Dakota. But liquid asphalt prices rose in California and Colorado, and plant-mix surfacing rose in Colorado. Structural steel prices dipped in the BPR and Nevada indexes but moved up in California, Colorado, and South Dakota.

SOME BIG CONTRACT AWARDS OF THE MONTH

Del E. Webb, S. 23rd Ave., and Rubenstein Construction Co., 1012 N. 27th Ave., both Phoenix, Arizona. Construct 1,200 family housing units, Air Force Academy, Colorado Springs, Colo. for the Dpt. Air Force, Air Force Academy, Box 1670, Colorado Springs, Colo. \$17,650,396.

Link-Belt Co., Prudential Plaza, Chicago 1, Ill. Coal preparation plant in Dante, Va. for Clinchfield Coal Co., Dante, Va. \$10,000,000.

Catalytic Construction Co., 1528 Walnut St., Phila., Pa. Design and construct five-story Point Pleasant plant to produce polyester film in Apple Grove, W. Va. for Goodyear Tire & Rubber Co., 1144 Market St., Akron, Ohio. \$9,000,000.

Badger Mfg. Co., Box 1026, Pasadena, Tex. and 230 Bent St., Boston, Mass. An aromatics process and recovery plant in Houston, Tex. for Sinclair Refining Co., 600-5th Ave., New York, N.Y. \$7,500,000.

Successful bidder on 19 earth-fill dams

"Our Allis-Chalmers equipment has proved it can move more dirt at low cost ... and let us be low bidder time after time. It gets a full share of credit for our success," says **Joe Duncan** of Arnett & Duncan, Corsicana, Texas.



TS-360 motor scrapers (15 yd struck; 20 yd heaped), like that shown at the left, are the big guns of the Arnett & Duncan fleet on earth-fill dam construction. Working with the TS-260's (11 yd struck; 14 yd heaped), they help make a high-production, low cost-per-yard team.

7,000 cu yd per day

... that's the kind of earth-moving production Arnett & Duncan get from their spread of Allis-Chalmers motor scrapers and crawler tractors.

Working on 1,000 to 1,200-ft hauls, the TS-360 and TS-260 motor scrapers are loading, hauling and dumping tough-to-handle waxy clay with 30 percent sand on a bed of shale. Even in this rough material, which normally slows down production, the Allis-Chalmers units have been cutting cycle time. The curved bowl bottom with offset cutting edge brings a real boost to loading cycles. Incoming dirt breaks up and rolls into the bowl, filling it with heaped loads ... faster.

Lower cost per yard

Joe Duncan reports that his Allis-Chalmers equipment can dig, haul and place dirt for a lower-per-yard cost ... move as much dirt as higher-rated capacity units.

"Our operators like our Allis-Chalmers equipment, too, because of the operating ease, riding comfort. You get a lot more production when the crew likes the equipment," adds owner Duncan.

Find out for yourself how productive Allis-Chalmers construction machinery can help improve your profit picture on a wide range of land improvement work. Ask for all the facts—and a working demonstration of real dirt-moving efficiency. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



**Look ahead...move ahead
...and stay ahead with**

ALLIS-CHALMERS



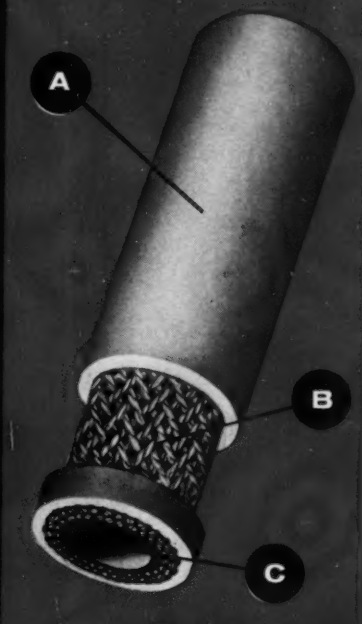
Iron ball plummets 25 ft., slams Acme-Hamilton air hose 25 times!

Not the slightest sign of damage to cover, carcass or tube could be found after a 2-ton iron ball was repeatedly dropped on the same spot of this rugged air hose. This is actual proof that you can specify an air hose that will not fail when subjected to very severe service.

Why this hose is so rugged:

- (A) Abrasion resistant red cover is immune to cutting and abrasion.
- (B) Two plies of Hi-Tensile braided yarn add strength ... flexibility.
- (C) Neoprene tube resists heat and oil; won't flake or harden.

Ask your distributor for this air hose, or write Dept. 107.



Acme Hamilton

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

ATLANTA • BOSTON • CHICAGO • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES
MILWAUKEE • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO • SEATTLE

Tough road duty tests operator and machine

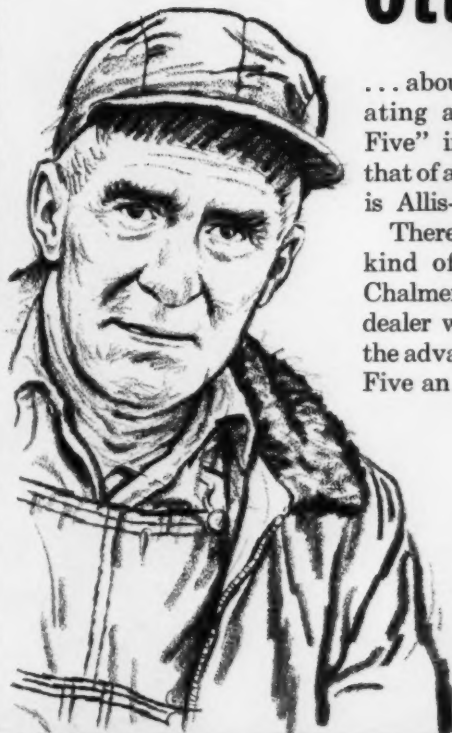
Otto Nikoley, Alta, Iowa, works full time maintaining roads.

Eight months a year, he and the Allis-Chalmers Forty Five motor grader work a program of finishing dirt and gravel roads. An average of three passes is all that's required to finish most of his jobs. During winter months, the grader is still productive. Equipped with snowplow, the machine is busy keeping roads open and traffic on the move.

Otto and the Forty Five work well together. There's plenty of power at hand to do the job. The Forty Five is easy operating, too. The platform is roomy and the deck is clear. Visibility is excellent all around, sitting or standing. And the blade's controls can't kick back. When Otto moves the lever, toggle engages or releases clutches surely, without wrist-snapping backlash.



Put your men on Allis-Chalmers motor graders . . . preferred by more operators, bought by more owners every year. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



Ask Operator Otto Nikoley

... about motor graders. He's operating an Allis-Chalmers "Forty Five" in Iowa. Otto will tell you that of all types of graders, his choice is Allis-Chalmers every time.

There are good reasons for this kind of enthusiasm. Your Allis-Chalmers construction machinery dealer will be glad to demonstrate the advantages that make the Forty Five an operator's favorite.



FORTY FIVE

120 brake hp • 6 speeds forward • 3 speeds reverse • 23,800 lb



**Look ahead...move ahead
...and stay ahead with**

ALLIS-CHALMERS

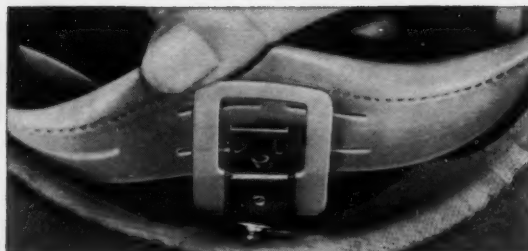


New M-S-A[®] Suspension gives you double cradle for

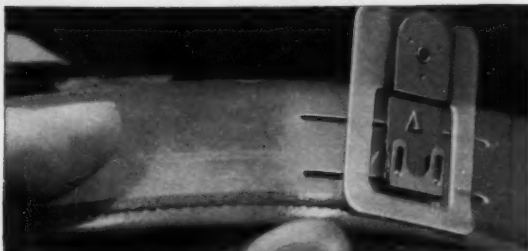
The new M-S-A "Fixed-Crown" Suspension for Skullgard hats and caps—with its unique double cradle design—is the answer to industry's need for the ultimate in head protection *and* comfort.

This suspension more than meets the Federal specifications of at least a 1¼" crown clearance between the wearer's head and the inside top of the shell. This crown clearance—so important when a heavy object falls on the hat—is made tamper-proof by a permanently fixed upper cradle providing a built-in margin of safety.

And how do you adjust for comfort? That's up to the wearer. The lower cradle, the one for comfort, is adjustable to the wearer's own



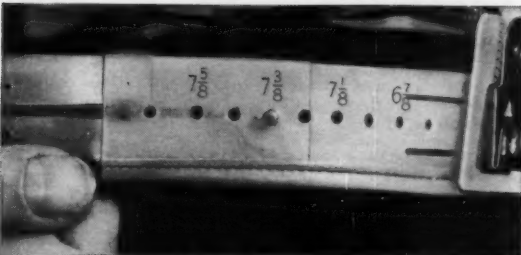
EASILY INSERTED AND REMOVED. Four wide snaps have positive spring steel lock-in catch. Permits easy removal and insertion, but prevents accidental detachment in the field.



ELIMINATES PRESSURE POINTS. Metal snaps are recessed into plastic frames. This exclusive design feature reduces layer thickness at points of contact.



AIR CUSHION SWEATBAND. The sweatband is designed with a rolled edge which provides an air cushion effect for greater comfort. Tab at end of sweatband keeps it smooth and free of bulges.



FAST SIZE ADJUSTMENT. Size adjustments can be made in seconds with a simple collar button device. Head sizes are stamped on the sweatband backing which can be adjusted in one-eighth units.

① "Fixed-Crown" Clearance and ② Adjustable Comfort

personal requirements. But this comfort adjustment won't affect that extra margin of protection in the upper cradle.

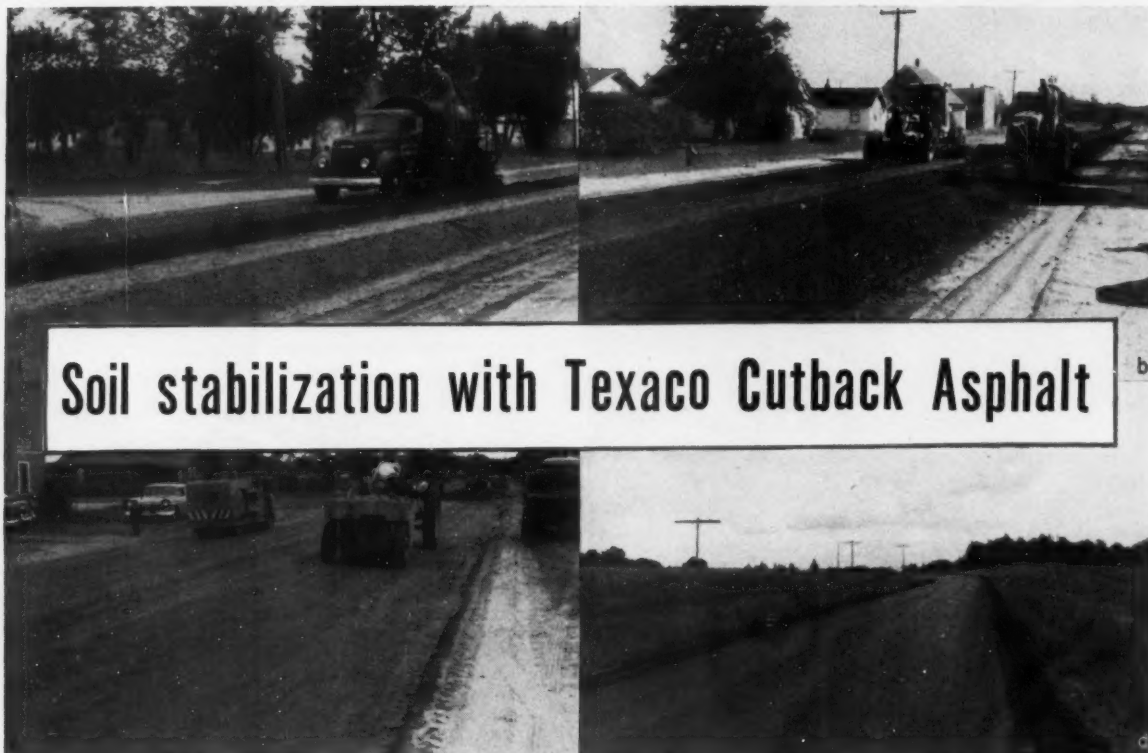
This new M-S-A "Fixed-Crown" Suspension is adaptable for MSA's Type K and Type B Skullgards, and the M-S-A Glass Fiber Hat. There's no cleaning problem, either. The suspension cradle is made of long-lasting, easily sanitized, plastic webbing. It's mildew-proof. Oil-proof. Acid-proof.

Check the other features of the new suspension illustrated above. And get in touch with the MSA man for answers to specific questions. Write for descriptive bulletin today.



MINE SAFETY APPLIANCES COMPANY
Pittsburgh 8, Pennsylvania

First Step in the Stage Construction of a Highway



Soil stabilization with Texaco Cutback Asphalt

- a. Applying a medium-curing Texaco Cutback Asphalt to windrow of soil.
- b. Pulvi-mixer and motor grader blend Cutback Asphalt and soil.
- c. Compacting Texaco-treated soil with multi-wheel and tandem rollers.
- d. Completed soil stabilization project in Wadena County, Minn.

Wadena County, Minn., is building this road by stages, thus spreading the cost over a period of years. Pictured here is the first stage. The cohesionless soil on the road is being stabilized by a thorough blending with a Texaco Medium-curing Cutback Asphalt. This transforms the formerly dusty, muddy road into a durable, waterproof, all-weather surface.

Eventually, when the increased volume and weight of traffic require it, the Texaco-stabilized surface will become the foundation for a heavy-duty, hot-mix asphaltic concrete wearing surface, two to three inches thick.

The new surface will form a close,

lasting bond with the previously stabilized base. The result is a flexible, rugged pavement, which absorbs heavy impact year after year with a minimum of maintainance.

Whether you are building or improving a road, street, airport or parking area, there is a type of Texaco asphalt construction exactly suited to your requirements. These types range from heavy-duty paving for interstate highways down to an inexpensive surface-treatment to eliminate dust and mud. Helpful information on all of these asphalt types is supplied in two free booklets. Copies can be obtained without obligation by writing our nearest office.



THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
 Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19

TEXACO ASPHALT

**"I LIKE THEIR MECHANICAL
DEPENDABILITY...LIKE THEIR
LONG LIFE...LIKE CATERPILLAR
DEALER SERVICE..."**



B. K. SOBY, vice president and secretary of the John Dieseth Co., Fergus Falls, Minn., amplifies the above by saying of his DW20s and other Caterpillar-built equipment: "They're good all-around machines with high production capacity. They're well-engineered down-to-earth machines that can be depended on to do a good economical job."

MR. SOBY has ample opportunity to prove out his preference for CAT earthmoving equipment on this highway improvement job—U. S. Highway 75 between Madison and Bellington, Minn. Working in hog-wallow type gumbo, two Cat DW20s with matching No. 456 Scrapers are pushloaded by a D9 equipped with No. 9S Bulldozer. The No. 456s are carrying 22 cu. yd. per load on hauls from $\frac{1}{4}$ to $\frac{1}{2}$ mi. The job involves moving 623,000 cu. yd.—50,000 yd. borrow and the balance general excavation. A Cat No. 12 Motor Grader maintains scraper haul roads.

Now a new DW20 (Series F) Tractor is available. It features a SUPER-TURBO Engine that provides 320 HP (maximum output) . . . 28% torque rise . . . top speed of 35.8 MPH!

The SUPER-TURBO incorporates a new concept in diesel engine turbocharging—an air induction system unique in earthmoving machines . . .

and another Caterpillar first. This system allows use of more of the Turbocharger's potential than was possible before. Results: twice as much torque rise, higher horsepower, better acceleration and gradeability. But more important, faster cycles, greater production and more profit—for you.

For lowest *total cost* earthmoving machines that give profit production with a minimum of down time—for nearby parts and service you can count on—contact your Caterpillar Dealer. He knows *your* problems, and will show you how Caterpillar equipment can meet them best.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

SUPER-TURBO ENGINE
—First in the Industry
—First in Performance



Even with peak pressure

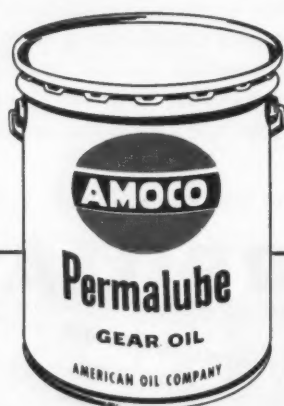
Permalube Gear Oil wins when the going gets tough

Permalube Gear Oil (SAE 80, SAE 90, SAE 140, SAE 250) is a superior compounded gear oil made from carefully selected base oils and proven additives. The blend of selected base stocks results in a gear oil with exceptionally high stability and high viscosity index. The proven additives insure non-corrosive, non-foaming and high anti-weld properties.

Permalube Gear Oil is recommended for enclosed gear trains in earth-moving equipment, and industrial applications, bus and truck transmissions and differentials, where the

recommendations call for extreme pressure (EP), hypoid (HP) or multi-purpose (MP) type lubricant. It is recommended for many passenger car transmissions and differentials.

Permalube Gear Oil readily passes the low speed-high torque axle test which makes it the ideal gear lubricant for heavy duty earth moving equipment. It also passes the high speed-low torque axle test with flying colors which makes it, without question, outstanding for passenger car service.



PERMALUBE GEAR OIL

*When you want top performance
you want Amoco Lubricants*

AMERICAN OIL COMPANY, 555 FIFTH AVENUE, NEW YORK 17, N.Y.

AMOCO ALSO PRESENTS . . .

Amoco HDX Oil
Amoco Superior Diesel Oils,
S-1, S-2, S-3

Perma-Flo Oils
Permalube All-Purpose Grease No. 158
Vesuvius "X" Gear Compounds

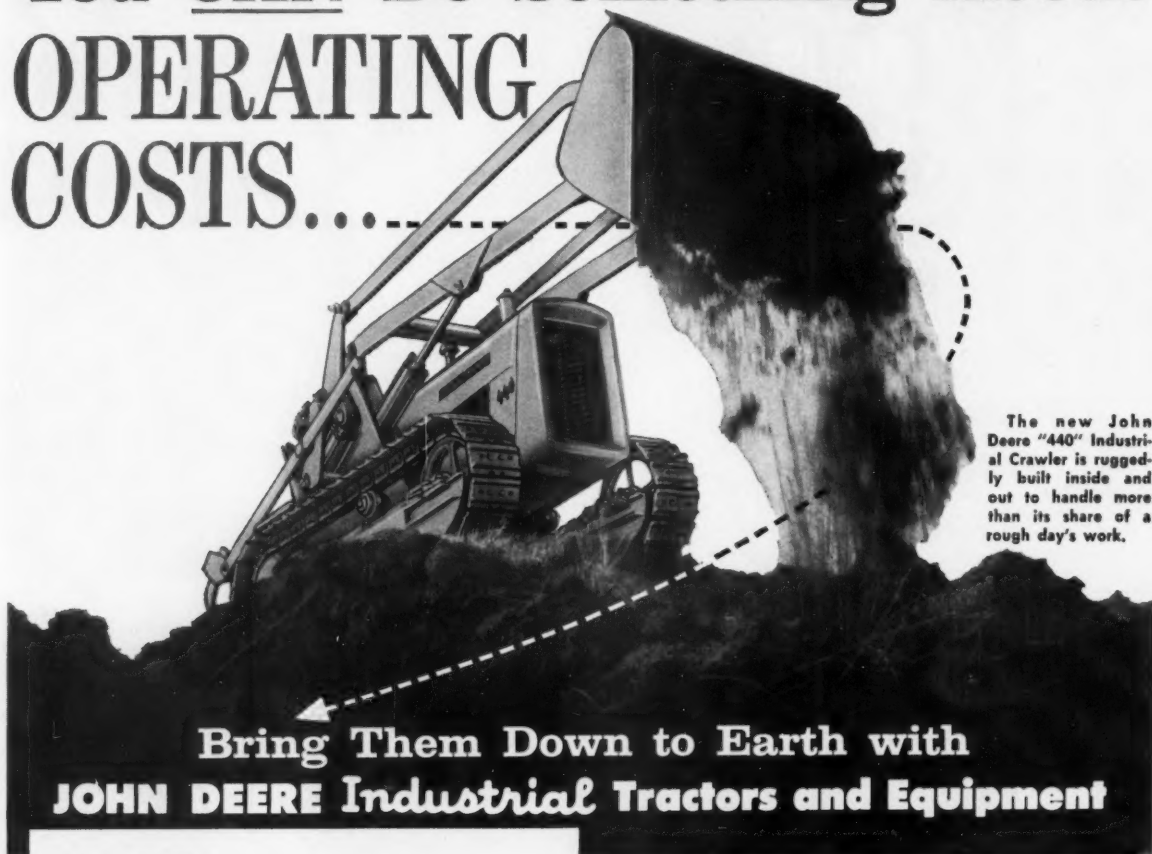
**PICTURE
OF THE
MONTH**



Traveler Derrick Has Long Reach

• Erecting a girder for the Red River Bridge at Grand Ecore, La., is the John F. Beasley Construction Co.'s new 200-ton traveler derrick. It can work as a guy derrick, a stiffleg derrick, or as a combination guy-stiffleg derrick. A 50-foot jib tops the 200-ft boom, and the rig can lift a 200-ton load at a radius of 100 ft. It will be disassembled and moved by rail from one job to the next. Main girders of the substructure were fabricated of lightweight T-1 steel, using semi-automatic submerged-arc welding and a special alloy flux prepared by Lincoln Electric Co.

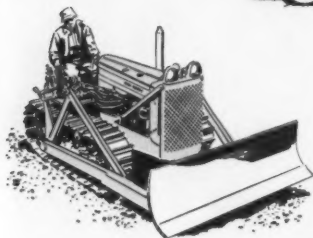
You CAN Do Something About OPERATING COSTS.....



The new John Deere "440" Industrial Crawler is ruggedly built inside and out to handle more than its share of a rough day's work.

Bring Them Down to Earth with JOHN DEERE Industrial Tractors and Equipment

New "440" Wheel Tractor is a highly mobile unit that can make your power dollars go farther than you thought possible.



The long-popular "420" Crawler is a busy, capable and economical tractor that continues to merit the praises of efficiency-minded industrial users.

Many optional features, including built-in power steering on wheel models and a new clutch-type direction reverser on all models, add to the versatility of John Deere Industrial Tractors. Equipped here with trencher is the "420" Wheel Tractor.



NO need to point out here that there is no room for waste in construction methods. You know that.

But did you know that there's one sure way of cutting that waste? That you can pick up new savings daily on those earth-moving jobs? And also on moving, loading, and hauling of sand and gravel and other construction materials?

Well, you can—by investing in John Deere Industrial Power and Equipment, starting your savings with the initial purchase price and continuing them with lower fuel, maintenance, and servicing costs.

Here is big-capacity power with built-in economy—four John Deere Tractors, both wheel and crawlers—especially engineered for industrial work of all types, and all available with a complete line of matched working equipment.

Learn about the John Deere way of bringing operating cost down to earth from your John Deere Industrial Dealer. Ask for a free demonstration.



Completely Engineered for Industry

For Further Information Write: JOHN DEERE INDUSTRIAL DIVISION • MOLINE, ILLINOIS



Where Huge New Stores of Power Will Be Created. One of the great construction jobs of our time is under way at the International Rapids section of the St. Lawrence Seaway project. The magnitude of the task is well illustrated by the view above, which shows work in progress on the Barnhart Island power plant. When completed, the giant installation will straddle the boundary between the United States and Canada, providing vast new stores of power for both nations.

Big gantry cranes have been tireless workers at many key points of the job. To handle the high, unwieldy lifts, they must be rigged with tremendously strong wire rope, and large quantities of Bethlehem Purple Strand have been furnished for the purpose. This tough steel cable, in both the $\frac{7}{8}$ -in. and $1\frac{1}{8}$ -in. sizes, has always proved a willing worker, and more than a match for the heavy loads assigned it.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation.

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING





As the trucks go...

only MACKS give you all this

- Widest range of heavy-duty truck and tractor chassis for construction and road-building (dumpers, concrete mixer models, flat-bed trucks, carry-alls). Four- and six-wheel models.

- Full range of off-highway dumpers . . . from 4-wheelers with a 15-ton rated capacity up to 6-wheelers with a 34-ton rated capacity.

- Wide Mack power options — diesel and gasoline engines — 150 h.p. on up to 400 h.p.

- Famous Mack transmissions from 5- to 20-speed, with option of torque converter on the larger units.

- Planetary gear reduction in rear-axle wheel hubs of larger

vehicles for smooth power transfer without excessively large gears in the carrier.

- Six-wheelers offer exclusive Mack Balanced Bogie with Power Divider — the flexible, four-wheel, rear-axle drive that delivers maximum power to the wheels with traction for extra work-hours.

- Rugged, high-tensile frames that give the utmost in structural stamina . . . heavy-duty axles and suspensions that make light of the heaviest loads over the roughest roadways.

- Models available — at once — from stock . . . or models "customer assembled" from standard Mack components. Option of power steering, power brakes, power clutch.





so goes the job!

You know that truck cycle time is the key to profits on any job. You know that the best equipment in the world—cranes, shovels, pavers—just gobble up earnings if they're sitting around waiting for the trucks to arrive.

And you know that you can't match Macks for the guts and go that keep your equipment humming! You know that Macks—with their extra strength and stamina—can pace the entire operation for months on end without interruption. With Macks—you know!—

You know because Macks have the power, traction and stamina to haul up the steepest grades and through the most slippery going... because Macks take 10-, 20-, or 30-ton loads in three or four passes... because you can always depend on a Mack!

So why not get the most out of all your equipment? Why risk ruinous delays? Why keep idle standby trucks when—with Macks—standby units

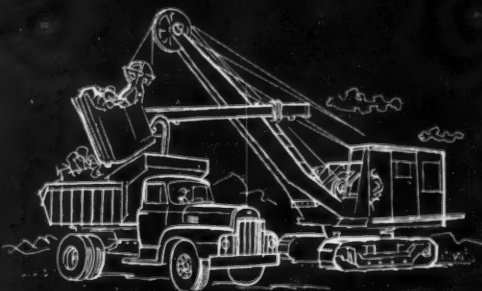
are a needless precaution. Why not cash in on the experience of seasoned contractors who'll tell you that two Macks can outwork, outlast and outearn three or more competitive units of equal capacity on rugged jobs. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

It's part of the language

...built like a MACK



Mack



NEW AMSCO 2-PART TOOTH

Special-alloy reversible tips (*easy to reverse*)
nearly double tooth digging life...

In quarry work, in cold and hot slag pits... in the roughest of digging tests, these new Amsco® 2-part Simplex teeth have outlasted competitive 2-part teeth more than 2 to 1... at a big saving in tip and adapter replacement time.

You get this longer wearing quality because of the special, rugged alloy used for both tip and adapter. Reversing tips extends digging life even more, yet takes only a few minutes.

Adapters outlast several sets of tips, are equally easy

to replace. Pin lock between tip and adapter seats and locks so securely, metal-to-metal, that even side blows can't jar it loose.

We'll be glad to send you a booklet containing reports by Simplex users and describing this new Amsco tooth completely. Write for it today.



AMSCO

American Manganese Steel Division • Chicago Heights, Illinois

Construction News in Pictures...



Big Pipe

Section of 96-in. concrete pipe swings over trench of \$10.3-million sewage interception line at Louisville, Ky. Contractor Rocco Ferrera of Detroit, Mich., places the heavy pipe sections in a trench 16 ft deep and 60 ft wide with a Northwest 95 crane. Pipe is reinforced with some of the heaviest gage welded-wire fabric ever used.

No Wasted Time

Three cranes erect a 66-ton stabilizer column at the Wilmington, Calif., refinery of Shell Oil Co. in just 26 min. Two American 50-ton truck cranes with 70-ft booms take hold at the main pick points; a 34-ton Lima truck crane stabilizes the bottom section during the lift. Contractor is Kaiser Engineers.

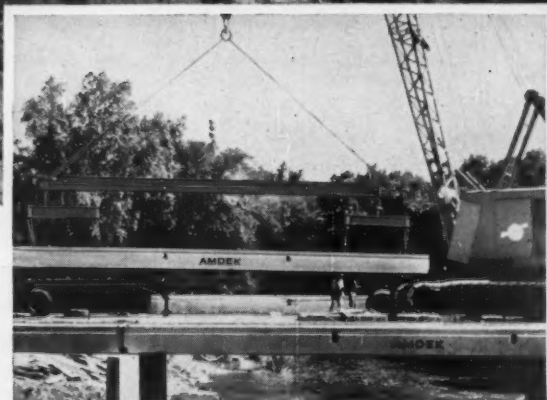


First Steel for Skyscraper

Workers guide massive 20-ton grillage and column anchorage into place on its footings to start steel erection on the \$70-million Time & Life Building, newest addition to Rockefeller Center in New York City. Bethlehem Steel Co. will fabricate and erect a total of 27,100 tons of steel for the 48-story structure before the end of this year.

continued on page 78

Prestressed Beams for 210-Ft.



Third Avenue Bridge over Flint River • Owner: City of Flint
Theodore Moss, Director of Public Works
C. A. Hammond, City Engineer
Designers: G. J. McIlvay and Sons, Lansing, Michigan
Design Load: H20-S16-44
General Contractor: Walter Toebe & Company, Lansing, Michigan
Prestressed concrete beams built by Lamar Pipe & Tile Company
Division of American Marietta, Grand Rapids, Michigan
Erection handled by
Dobson Heavy Hauling Company, Bay City, Michigan

76 Beams Erected in 4½ Days with 110-Mile Haul!

The speed of prestressed concrete construction was dramatically demonstrated in the building of the Amdek Bridge at Flint, Michigan, shown under way in the photo above.

The 76 beams in this bridge went up in 4½ days. Said an observer: "I watched trucks pulling on the bridge. From the time one came to a stop and a girder was placed on the bridge, the average time elapsed was 12 minutes."

The prestressed components of this bridge were manufactured in just 20 days. It was estimated that well over a year would have been required for delivery of corresponding steel structurals.

Advantages of Prestressed Concrete

Fast availability and speed of erection are only two of many advantages that make prestressed concrete the marvel of modern building materials. Prestressing increases tensile strength of concrete tenfold.

Less concrete is needed. Strength-to-weight ratio is high. Longer spans and thinner sections are possible. Recovery after overloads is greatly increased. Prestressing gives the ideal combination of concrete's permanence PLUS amazing flexibility and elimination of cracking.

The adaptability of prestressed concrete is as unlimited as the imaginations of engineers and architects. Today it is being used in a range of applications from fence posts to giant bridges and multi-story buildings; from swimming-pool diving "boards" and movable parking lot curbs to airport runways and railroad snow sheds.

What triggered this trend to prestressed concrete? The development of practical, efficient tensioning materials. Union Wire Rope Corporation was a pioneer in this field. Today we're meeting the mushrooming demands for Tufwire high tensile wire and strand with on-schedule speed and dependability of supply. At the same time, we're gearing production facilities to the needs of tomorrow.

Bridge Made in 20 Work Days!

Highway Program Calls for 300,000 Bridges! How Will You Share in Supplying Them?



The vast national highway construction project assures a 15-years-plus market for bridges. Most of them can be built much faster and more economically with prestressed concrete than with any competitive building material.

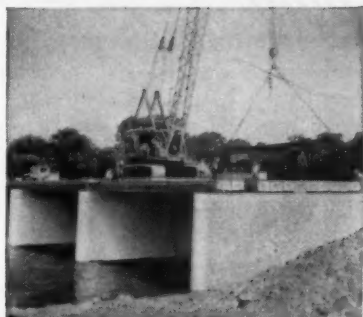
It's history's biggest order for bridges. A giant demand for present makers of prestressed concrete. And a king-size opportunity for those who decide to go into prestressing business now.

For prestressed concrete construction answers this bridge need as nothing else can. In high degree of strength and permanence. Speed of construction. Savings in time and money. More profit for suppliers and constructors, and greater value for taxpayers.

Prestressing offers opportunities not only for the on-site contractor, but also for the contractor who would like to operate a permanent casting yard as an arm of his business or as a commercial fabricator. Opportunities in bridges. Opportunities in buildings of every kind. Opportunities in highway slabs, now in the advanced experimental stage.

If you're a present user of prestressed concrete, or engaged in making it, our engineering department and research laboratory will be glad to give you a lift with any prestressing problem or project.

If you're considering the establishment of a new prestressing plant to supply your area, let us help you explore the possibilities.



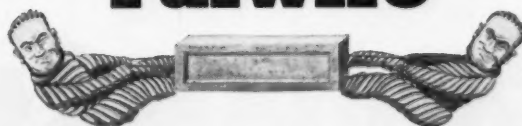
16-ton girder has just been lowered into place. The girders are 27" deep and 3' wide box section, tensioned with 28 3/4" Tufwire strands in the approach spans and 28 3/4" in the center spans. Overall width at the bridge is 60-ft.

Approach spans are 58'10", center spans 52'6". During erection, the bridge was subjected to 144 tons of live load carried on just 6 girders—far in excess of load in normal use.




The prestressed girders were built on the casting beds, partial view above, of the Lamar Pipe & Tile Company at Grand Rapids, and trucked 110 miles to the job site. The four spans of the bridge total 210-ft.

union
Tufwire®



Stress-Relieved Wire and Strand

58-6



union Wire Rope corp.

SUBSIDIARY OF STEEL CORPORATION

2270 Manchester Avenue Kansas City 26, Missouri

Specialists in high carbon wire, wire rope, braided wire fabric, stress-relieved wire and strand.

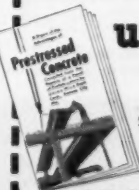
NAME _____

FIRM _____

ADDRESS _____

CITY _____ **ZONE** _____ **STATE** _____

Send Now for your FREE Copy of this digest of PRESTRESSED CONCRETE ADVANTAGES from data supplied by a panel of prestressed fabricators



Prestressed Concrete

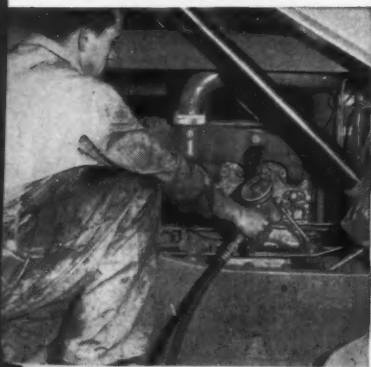
CUT EQUIPMENT DOWN-TIME



Lubricate with fast, custom-built

Alemite Portable Service Stations!

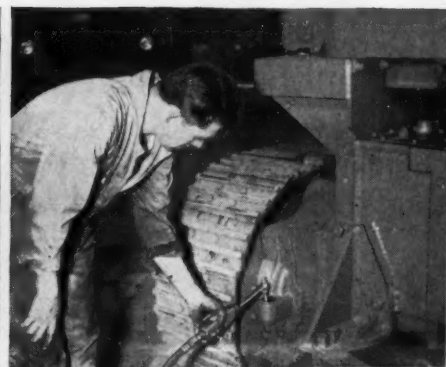
No engine oil wasted—delivers
exact amount of oil required!



Fast, easy, high-pressure lubrication of all bearings
equipped with hydraulic or button-head fittings!



Quick filling of final drives,
gear housings, transmission!



AND MAINTENANCE COSTS !



63% faster lubrication than hand gun methods!

Trucks, tractors—any heavy equipment—get in more “work hours” when you lubricate *on the job* with a fast, efficient Alemite power rig! For example, take a thousand pounds of grease—just a little over two full drums—and a relatively small amount for an average construction job. With Alemite power lubrication you can save 239 man-hours compared to hand methods—almost a six-man forty-hour week!

Bring modern lubrication to equipment in the field whenever and wherever you need it. Eliminate costly delays. End travel time to and from the grease shop. Reduce chance of costly bearing failures.

Here's how an outfit rigged especially for your needs can easily be selected from standard Alemite equipment: 1. You choose the truck that fits your needs for size, power, terrain. 2. A standard air compressor is installed. 3. Alemite Barrel Pumps are added to handle pressure gun and gear lubricants . . . motor oils. 4. A bank of Alemite hose reels are added. They cover a forty foot radius.



Air line equipment for on-the-job tire inflating, air cleaning!



Mail Coupon Today for FREE Booklet!



Alemite, Dept. P-58
1850 Diversey Parkway, Chicago 14, Illinois

Gentlemen: Please send me your FREE illustrated catalog of Alemite Portable Service Stations.

Name

Company

Address

City Zone State



On the Money

About 100 ft beneath downtown Pittsburgh, Dravo Corp. workmen "hole through" a 10-ft-dia sewer tunnel, part of the city's complex \$80-million interceptor sewer system. Dravo drove the 4-mi tunnel through solid rock from headings at each end. When the two segments linked up in the center, they were only $\frac{3}{8}$ -in. out of alignment.

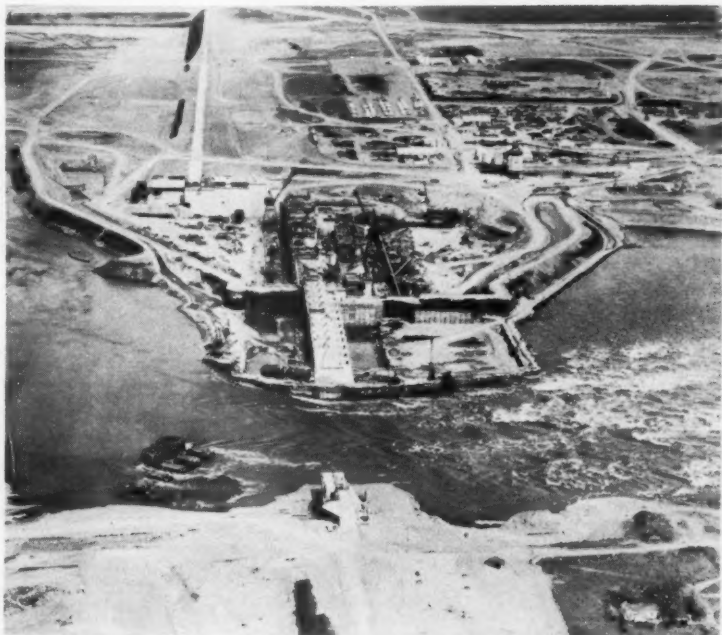
Almost Halfway

Priest Rapids Dam on the Columbia River in Washington, is 40% complete. Merritt-Chapman & Scott Corp. is removing the low cofferdam around the first 11 spillway bays (center) so that the river may flow between those piers while the remaining 11 spillway bays are constructed inside the cofferdam just started (lower right).



Concrete Job

A pair of Manitowoc crawler cranes erects a 50-ton prestressed concrete roof beam 100-ft long at Lehigh Portland Cement Co.'s new plant near Miami, Fla. Beam is one of 39 that will support a roof of 916 precast concrete slabs for a huge storage building 864 ft long and 100 ft wide. It is scheduled for completion this summer.

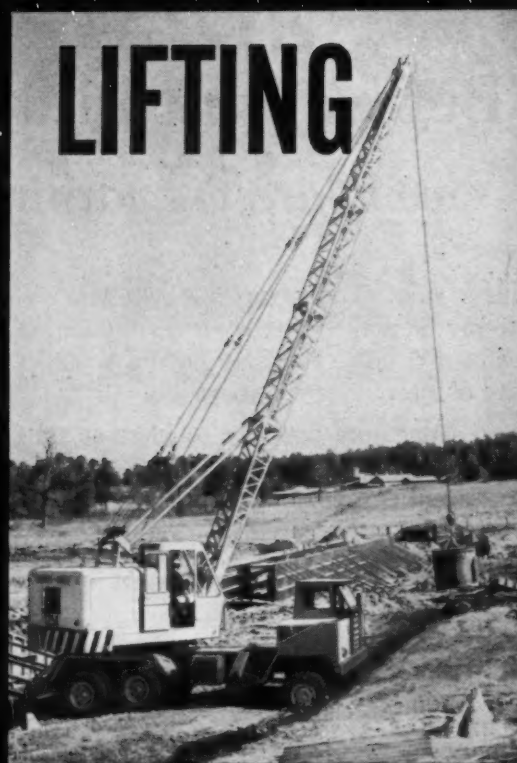


DIGGING



LIFTING

or



"QUICK-WAY" is an all-around money-maker!

Here's a "QUICK-WAY" 125-A owned by Montgomery Construction Company, San Antonio, Texas, doing a job in Huntsville. These photos show the Montgomery machine digging out a culvert and then pouring concrete on the same job.

The five-model "QUICK-WAY" truck shovel line has been especially engineered to offer companies, like Montgomery, all the small shovel versatility with all the big shovel features. The "QUICK-WAY" has been engineered to meet rugged heavy duty specifications with fewer moving parts. The power train is oversized, all shafts are splined for easy maintenance. Extra strength has been built in the machinery frame and gantry for greater lifting power.

"QUICK-WAY" 125-A shovels are available in 6/10 yd., 12½ ton truck mounts; 105-A in 5/10 yd., 10½ ton truck crane; 105-AC in 5/10 yd. crawler; 85-A in 4/10 yd., 8½ ton truck crane; and 85 AC in 4/10 yd. crawler.

"QUICK-WAY" is the only truck shovel offering an interchangeable, hydraulic grading, digging attachment—the new UTILO-SCOPE makes dozens of jobs possible with only a single attachment.

"QUICK-WAY" has more big shovel features...with more engineered attachments...to handle more kinds of jobs...with greater profits.

**For demonstrations and prices,
see your "QUICK-WAY" distributor**

"QUICK-WAY" TRUCK SHOVEL COMPANY

a  subsidiary

DENVER, COLORADO



"QUICK-WAY" Truck Shovel Co., 2401 E. 40th Ave., Denver 3, Colo.
Please send detailed bulletin on the new "QUICK-WAY"
UTILO-SCOPE hydraulic digging attachment.

Name _____
Company _____
Address _____
City _____ State _____

Before you bid that next job . . . *compare the earning power of "Twins"*

Unless your equipment can help you increase production — without a corresponding increase in costs — you may have a problem instead of a profit on your next job.

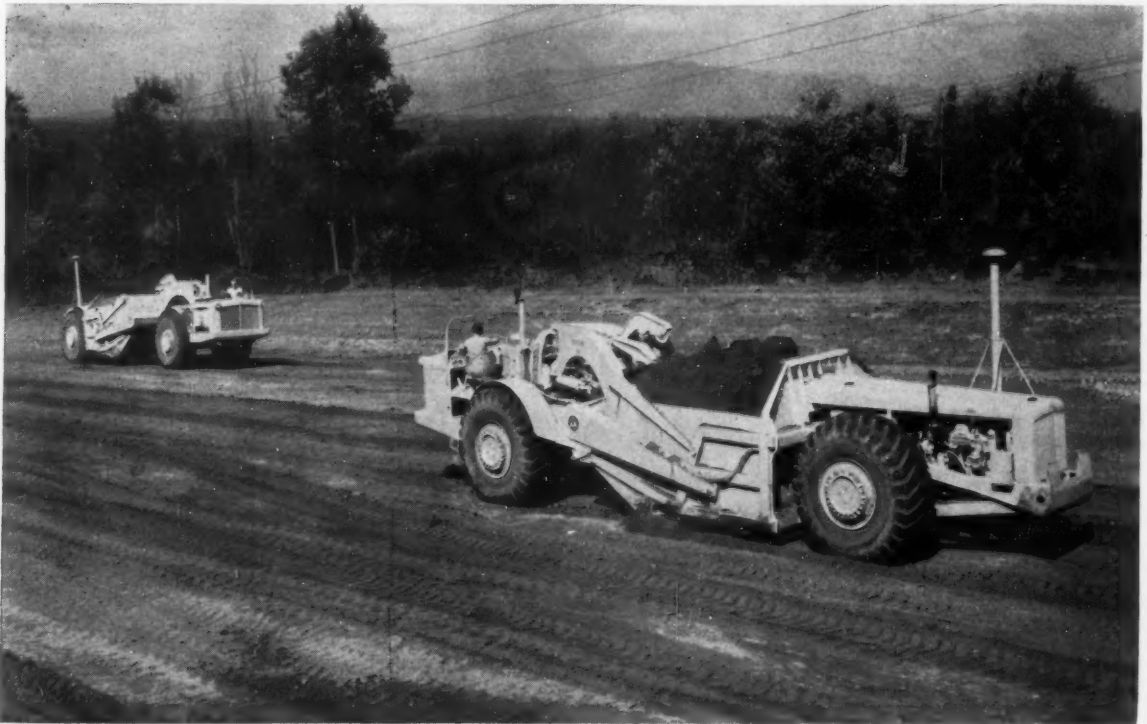
There's one sure-fire way to increase productivity — use the latest methods and the most efficient equipment available for the job,

even if it means replacement or addition to your fleet. To stay competitive and still get your share of work — at a price that brings a profit — you simply can't afford to pass up the higher return on investment with new techniques and machines. Here's a typical comparison . . .

On an investment of \$255,000 . . . 38% gross return

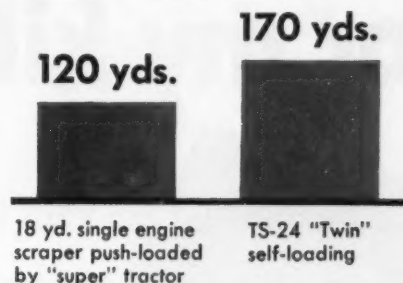
Suppose you have a spread of three 18 yd. single engine scrapers working on a 2,000' haul. They're push loaded by a 300 h.p. "super" tractor and you're also using a motorgrader and 200 h.p. dozer and roller. Conditions are average (7% rolling resistance) so your scrapers produce about 360 yds. per hour. Total investment for the entire spread would be about

\$255,000 — an hourly cost of \$77.30. That figures out to 21.5c a yd. Assuming a work season of 2,000 hours, you'd have a total production of 720,000 yds. At an average bid price of 35c a yd., gross revenue would amount to \$252,000 and your dirt moving cost would total \$154,800. The return is 38% on the equipment investment.



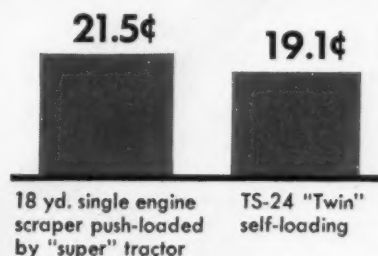
HOURLY PRODUCTION

2000' haul—average conditions, 7% rolling resistance—50 minute working hour



COST PER YARD

2000' haul—average conditions, 7% rolling resistance—50 minute working hour



16% lower investment . . . 33% higher return

Now, let's say you put two Euclid TS-24 "Twin" Scrapers on the same job and use the same grader and dozer. With the "Twins" self-loading in the average condition, a reasonable estimate of production would be a total of 340 yds. an hour. Total investment, with dozer, roller and grader, would be \$214,000. Hourly cost of the complete spread would be \$65.00, with a cost per yard of 19.1¢. Season production of 680,000 yds. would produce

gross income of \$238,000 at 35¢ a yard. Your dirt cost of \$129,880 would result in a 51% return on the equipment investment.

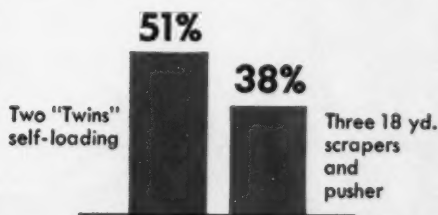
The figures in the above comparison may not jibe with your cost figures but they're down-to-earth estimates of the built-in productivity of the "Twin". Based on your own experience, use production and cost figures that you're sure of and you'll find that Euclid "Twins" will give a tremendous bidding and profit advantage on any size and kind of job.

And don't overlook the bonus performance of the TS-24 that doesn't show in specs or calculations. For example, it's self-loading and independent of other equipment for pioneering work and small yardage jobs . . . it has all wheel drive that enables it to work earlier and later in the season, under conditions that keep other scrapers sidelined. And when you're really pressed for time and yardage, you can add a pusher tractor to get almost unbelievable hourly production.

With "Twins" in your fleet you can bid more work, more profitably and realize the highest return on investment. For facts and figures proof, and a demonstration on your job, see or call your Euclid dealer.

RETURN ON INVESTMENT

Comparative return on investment—3 single engine 18 yd. scrapers with "super" pusher versus 2 Model TS-24 "Twins" self-loading



Engineered to fit the job . . .
Euclids are your best investment



EUCLID DIVISION
General Motors Corporation
Cleveland 17, Ohio

"I don't think for my kind



Official registrations show...

**AMERICAN
BUSINESS BUYS
MORE
FORD TRUCKS
THAN ANY
OTHER MAKE!**



FORD TANDEM with 10-yard dump body and new F-600 with 5-yard dump ... part of Mr. W. L. Fields's Ford Fleet.

there's a tougher truck of work"

says W. L. Fields

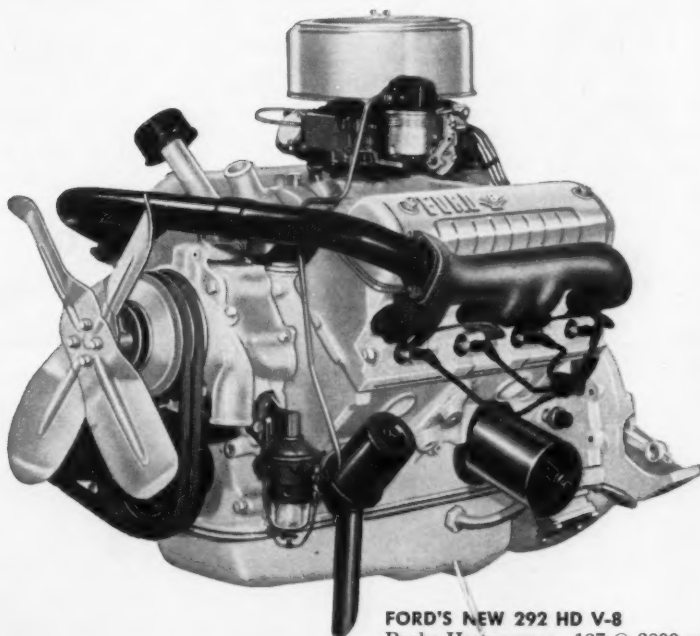
Contract Hauler, Wichita, Kansas

**"And they cost less
to operate than
any trucks we've
ever owned!"**

"Our 13 Fords are mostly two-ton dumps. They haul 6 yards of rock and sand, averaging about 7½ miles per gallon of gas. We get 6 mpg with Ford tandems carrying 14 tons. And they all really hold up. Ford's Heavy Duty V-8's are good for an average of 75,000 miles before an overhaul! We have a '55 Ford with over 150,000 miles on it, and I'll bet there's not another dump truck around here that's in such good shape."

**Whatever your business . . .
there's a FORD truck for your
special needs**

Official registrations for 1957 show that *American business buys more Ford trucks than any other make*. There are many reasons



FORD'S NEW 292 HD V-8
Brake Horsepower—187 @ 3800 rpm
Bore—3.75 in. Stroke—3.30 in.
Displacement—292 cu. in.

for this popularity . . . many reasons for *you* to make your next truck a Ford!

Ford trucks are your best buy, too! Ford's initial costs are *low* and resale value is traditionally *high*. Modern Ford Styleside pickups, for instance, are the lowest priced with full cab-wide body . . . giving you 23% more loadspace than any traditional type pickup box.

Only Ford offers the economy

of Short Stroke power in all engines, Six or V-8. And Ford's Heavy Duty V-8's offer new, advanced durability features. Ford's rugged cab and chassis construction means these new '58s are built to last. All this plus the proven fact that Ford trucks last longer adds up to America's No. 1 truck value.

See your local Ford Dealer for the latest in '58 trucks or the best in A-1 used trucks.

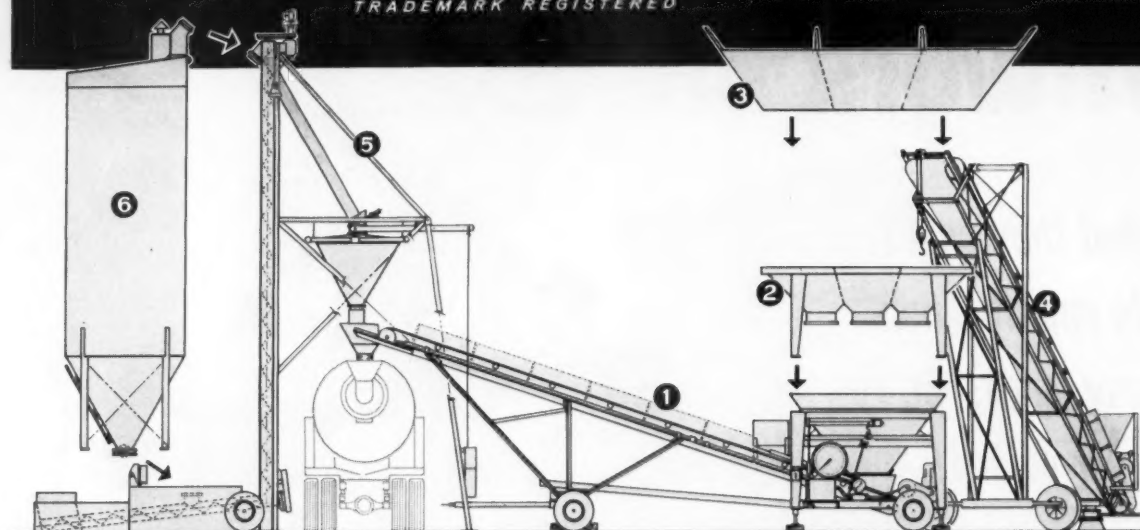
FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!




BATCH-A-BOUT...biggest


TRADEMARK REGISTERED





Your investment in a **BATCH-A-BOUT** can be as modest as you care to make it.

With the basic components ... the aggregate weigh batcher, batch transfer conveyor and sack cement loading hopper  ... you can enlarge the plant later to

suit bigger jobs as your needs grow. In a step-by-step enlargement of the plant, you

can add the 12 ton capacity overhead aggregate bin-gate section which is still low enough for scoop loading and highway transport  ; bin top extension

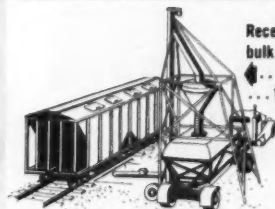
complete with heap plates to 40 tons storage  ; portable aggregate bin

loading conveyor  ; bulk cement receiving and elevating screw with auto-

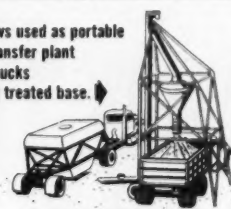
matic batcher and compressor  ; 1000 cu. ft. cement silo 

Plant output varying from 30 to 60 cubic yards per hour easily attained depending on equipment used.

Aggregate bin loading conveyor as a portable stacker.



Receiving screws used as portable bulk cement transfer plant
... to bulk trucks
... for cement treated base.



money-maker in the field earns its way every day in many ways

Versatile BATCH-A-BOUT is more than a rugged, efficient cement and aggregate batching plant compact in size and cost. Its components can be used separately as a radial stacker or bulk cement transfer plant to reduce the costly investment in materials handling equipment.

Easily and economically transported to the job site on projects too small to warrant a NOBLE-MOBILE or stationary plant, BATCH-A-BOUT saves long transit-mix hauls and insures profit on marginal jobs.

With BATCH-A-BOUT, ready-mix producers test the potential of a new area, protect their business against competition during periods of peak demand, supply concrete on construction jobs far

beyond normal range. Lumber and building supply dealers meet the ready-mix requirements of their customers. BATCH-A-BOUT provides contractors with low cost concrete on building, bridge and highway work in remote areas.

BATCH-A-BOUT is engineered and built to the same standards of quality as NOBLE-MOBILE, NOBLE semi-portable or NOBLE stationary plants. Aggregates are weighed manually . . . cement automatically. Water is metered manually. With optional automatic graphic recorder for cement, BATCH-A-BOUT will comply with rigid governmental specifications on many projects. BATCH-A-BOUT can be towed by pickup, mixer truck or dump truck and meets highway transport regulations.



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New B.F. Goodrich Hi-Torque Brake STOPS TWICE AS FAST



Continental-Wooldridge self-propelled Dumper and Scraper Models CWD-214, CWD-321, CWD-221, CW-215, CW-220, and high-capacity tractor-drawn Scrapers, have capacities up to 30 yards struck and 39 yards heaped. 22" x 7" B. F. Goodrich Hi-Torque Brakes provide maximum stopping power.

HERE'S THE ONLY heavy duty brake that will give you the reserve stopping power you need for today's new, larger off-road equipment. In one operational test, the B. F. Goodrich Hi-Torque Brake stopped a popular 24-ton capacity truck at a rate of 18 Ft/sec². This same truck, equipped with conventional two shoe brakes, achieved a deceleration rate of only 7 Ft/sec².

Full circle stopping power is the main reason for the superiority of the B. F. Goodrich Hi-Torque Brake. Its exclusive design gives more lining contact area than any other drum brake. An hydraulic expander tube actuates each of 12 shoes—allowing them to follow drum eccentricities with equal lining pressure. This gives a smoother, faster, safer stop with much less chance of fade.

What is even more important to most operators, the B. F. Goodrich Hi-Torque Brake is easy to service. It requires no lubrication—and lining changes can be made with standard hand tools. On many jobs where ordinary brakes require excessive down time, the Hi-Torque Brake will let you operate with *no* down time.

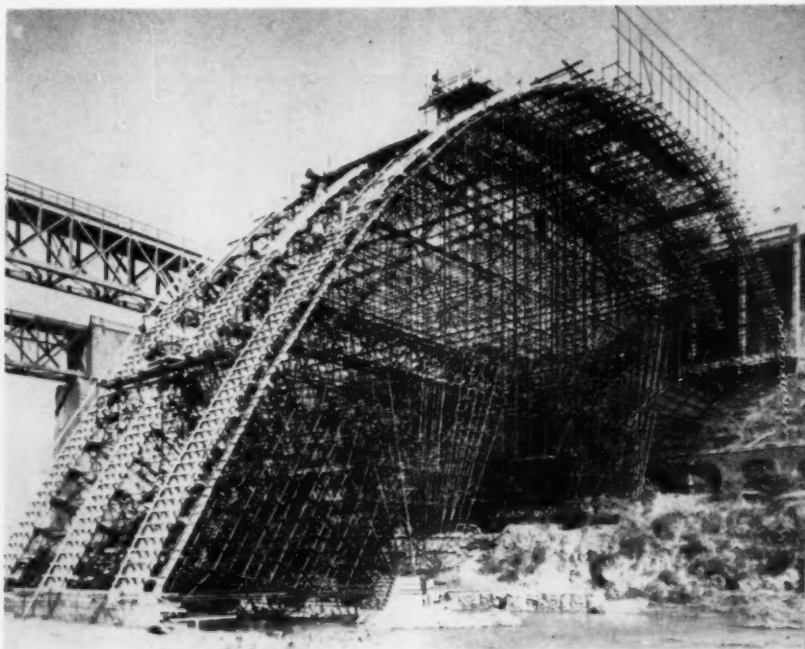
Find out how your operators can speed up cycle time and still maintain better braking control. Free booklet—The B. F. Goodrich Hi-Torque Brake—gives specifications and test results. Write B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Troy, Ohio.

B.F. Goodrich Hi-Torque brakes

Construction 'Round the World...

In Italy

Open fan, radially arranged steel tubular scaffolding supports formwork for a \$500,000 highway bridge across the Petrace River near Gioia Tauro, a village south of Naples in Calabria. The scaffolding rests on its own concrete foundations and holds forms for three concrete arches. Measuring 700 ft long and 43 ft wide, the bridge will serve a highway that connects Naples and southern Italy.



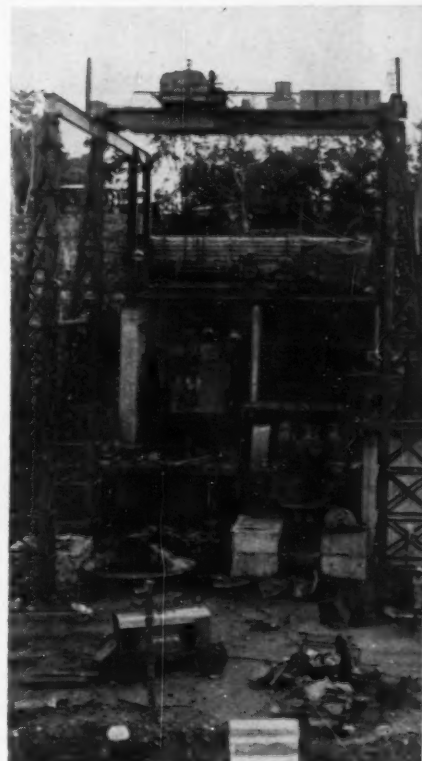
In England

Caterpillar 955 Traxcavator mounting 1½-yd bucket easily excavates footpath 240 ft long in Lansdowne Rowe, Berkeley Square, London that will give access to eight small shops between the famed Mayfair Hotel and the Astor Club. Contractor A. N. Coles, Ltd., first intended to dig the confined area by hand. But he tried the 70-hp tractor-shovel and it did the job.



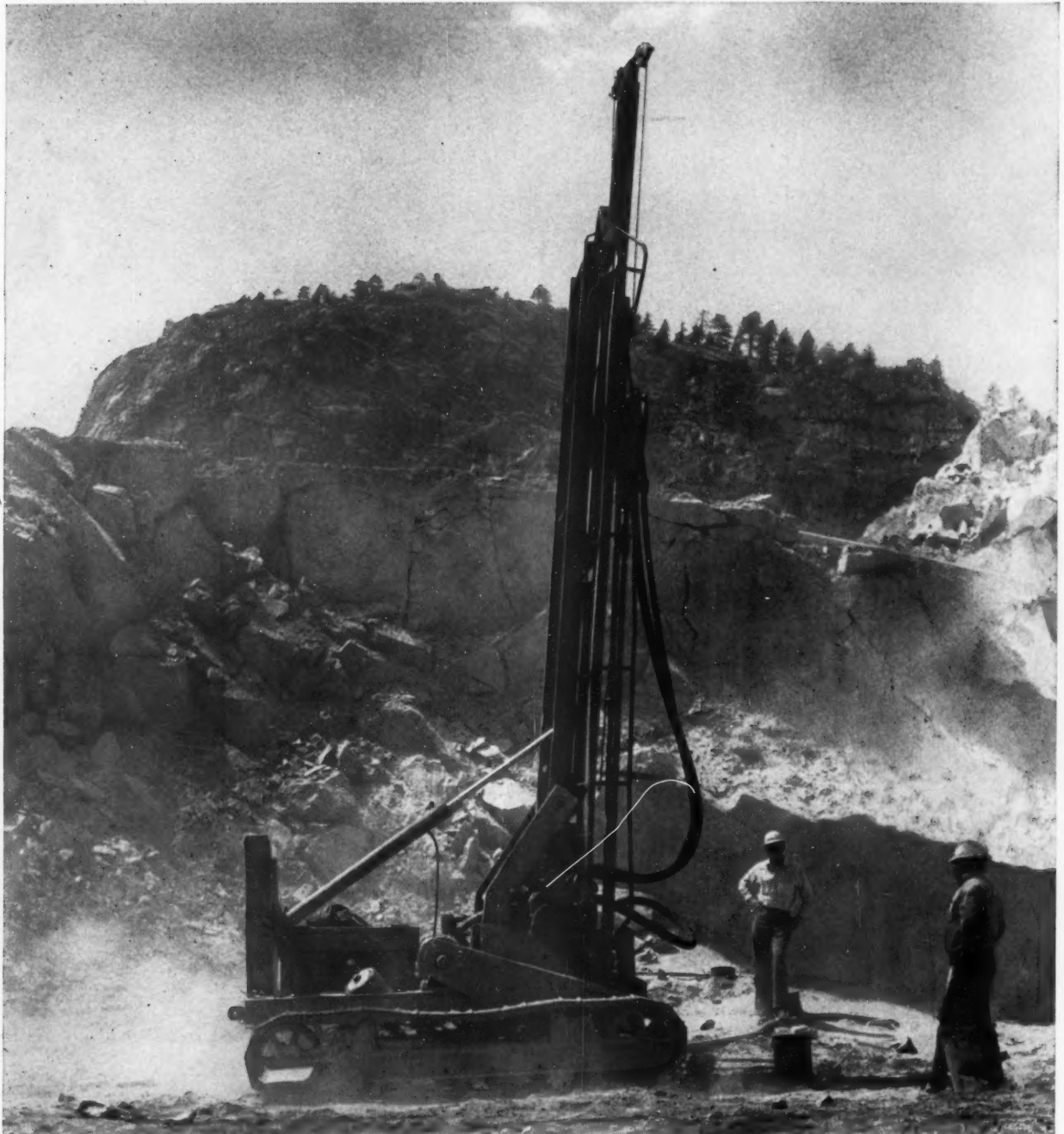
In India

Allis-Chalmers 36-55 Superior Gyrotory Crusher will produce aggregates for concrete that will go into the building of the \$95-million Rihand Dam in Utter Pradesh, an Indian state bordering the Himalayan kingdom of Nepal. A quarry 2½ mi from the dam site will supply stone for aggregates. Sand for the project will come direct from the river bed and be processed in an on-site rod mill.



(Advertisement)

SPEED...POWER... GARDNER-DENVER

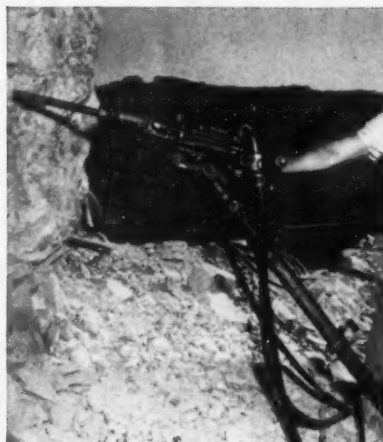


A 5½" hammer wallop. Here's deep hole drilling power in a class by itself. Gardner-Denver DH143 fills the rock drill gap between wagon drill and rotary rig.

DEEP HOLE PUNCH BLAST HOLE DRILLS



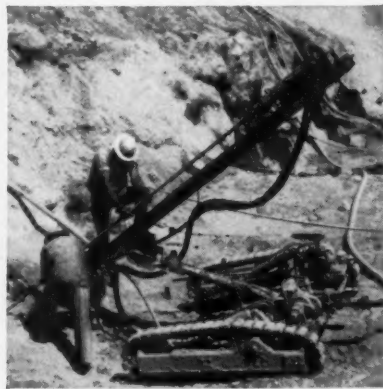
New mobility in an old quarry favorite. This new deluxe model of "Air Trac"® provides complete power positioning for all vertical, horizontal and flat lifter holes from centralized controls.



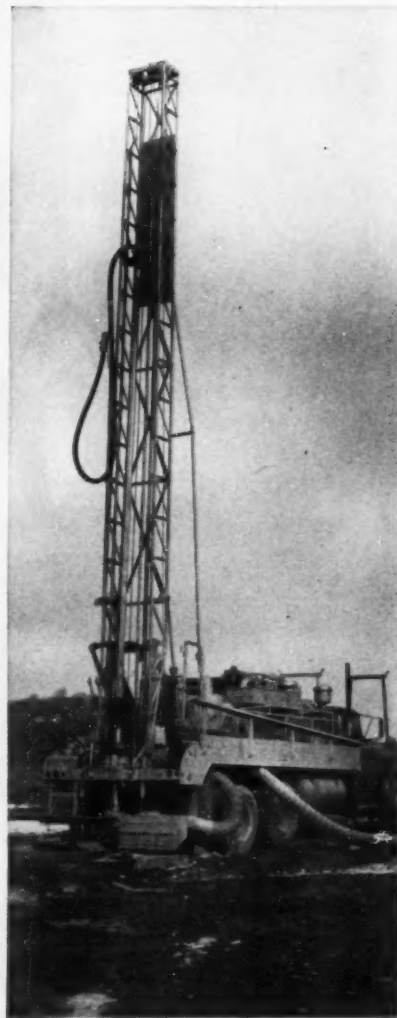
Lightweight combination. Easily handled drilling power for fast, clean holes with Gardner-Denver FL48 and FL58 air feed leg drills.



Air power for all drills. And plenty of it when you put water-cooled, all-weather Gardner-Denver rotary portables on the job. Five models from 125 to 900 cfm.



Long-life drill steel. Gardner-Denver sectional rods, couplings, ring seal shank . . . cut drilling costs . . . reduce steel breakage. Carburizing produces hard case . . . soft, tough core structure. Shot-peening increases fatigue resistance.



In-the-hole power for rotary rigs. New, hard-hitting Gardner-Denver "Mole-Dril"®* rides with bit through rock, delivers more foot-pounds of energy to the bit than any other drill of its size.

*Trade-Mark



ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING
GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Heltzel Flex-Plane



UNITIZED BATCHING PLANTS to further speed set-up and dismantling time . . . to give you even greater on-the-job flexibility. The new Heltzel Unitized Plant—like these on a G. Toccalino & Son job in Detroit—is designed in three easy-to-handle sections that go together in minutes. This installation is set up as push-button drive-through for extra fast service. Batchers and scale unit is integral part of center section . . . a real time-saving innovation. (Note new Heltzel E-4 twin-batcher cement plant.)

2202

THE HELTZEL STEEL FORM AND IRON

FLEX-PLANE COMBINATION FINISHER-FLOAT does two jobs in one, reducing crew time to an absolute minimum. The combining of these two jobs is a natural—results in a better finish in faster time. This new machine was thoroughly tested on several jobs last season. Contractors report 4000 feet of 24-foot pavement was floated and finished in a normal day with but two or three hand finishers required. Get the facts on this profit maker before submitting too many quotations.

Engineering



brings you unitized batching, improved forms and a new way to finish concrete

Modern highway design demands top efficiency in highway construction machinery. Portable . . . versatile . . . automatic . . . *fast*.

That's why Heltzel Flex-Plane Engineering works to give you the most modern road-building equipment obtainable. Up-to-date engineering, for example, has produced a definite contractors' preference for Flex-Plane over all other makes. This preference is based, of course, on proved performance.

Find out now what Heltzel Flex-Plane Engineering can mean to you — call on actual users of Heltzel and Flex-Plane equipment, and prove to your own satisfaction that this is the *modern* equipment for modern highway construction.

HELTZEL DUAL DUTY FORMS, such as those shown in use on the Plattsburg SAC base, have been redesigned to assure fast setting and stripping with maximum strength-weight ratio. Sizes available to exactly suit your job requirements.



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Insurance costs went down..

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LIBERTY MUTUAL[®]

The Company that stands by you[®]

when they insured with Liberty Mutual

Your insurance costs are based primarily on your loss experience. Liberty Mutual, world's largest writer of Compensation Insurance, has the know-how and the manpower to reduce your losses — and lower your insurance costs.

The chart at left typifies the effect of Liberty's loss prevention program. An Eastern contrac-

tor has lowered his rates 65% . . . a St. Louis contractor is saving 42% . . . a road builder in the Mid-West has reduced his costs 33% since switching to Liberty Mutual. On one job alone, the New York Thruway, eight other Liberty Mutual policyholders split a cash saving of more than \$1,000,000.

Here is a list of larger policyholders who have reduced their cost by 33% or more since switching to Liberty Mutual. Ask them about Liberty's service, protection and savings.

L. H. Lacy Co.

J. Briscoe, Contractor

Bill Hall Construction Co.

Ring Construction Corp.

Barbarossa & Sons Inc.

I. E. Millstone Construction Inc.

Porter-DeWitt Construction Corp.

James D. Morrissey Co., Inc.

Doyle & Russell Construction Co.

L. W. Routh Construction Co.

HERE'S HOW LIBERTY WORKS TO HELP YOU

Advance Analysis, by Liberty engineers, spots and controls potential hazards before each of your projects begins.

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146 branch offices at your service.

Research by specialists in Liberty's own laboratory helps solve your difficult problems.

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You Deal Direct with company sales, loss prevention, claims and medical personnel. No middlemen.

Dividend Savings. Liberty's "expense ratio" on Compensation Insurance is lower than any other mutual insurance company. Liberty has returned \$455,504,407 in dividend savings to policyholders.

a **PAYLOADER®** does them all!



FREE BOOKLET

Shows action views and details of the many interchangeable attachments (including exclusive new ones) available for all sizes of 4-wheel-drive "PAYLOADER" tractor-shovels.

THE FRANK G. HOUGH CO.

706 Sunnyside Ave., Libertyville, Ill.

Send "PAYLOADER" 4-wheel-drive information as follows:

- ☐ Free attachment booklet
- ☐ Hough purchase and lease plans.
- ☐ model HO (9,000 lb. carry cap.)
- ☐ model HH (7,000 lb. carry cap.)
- ☐ model HU (5,000 lb. carry cap.)

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Title _____

Company _____

Street _____

City _____

State _____

5-B-1

Only a **PAYLOADER®** can do them all!

The rubber-tire tractor-shovel has won its wide popularity through exceptional versatility and flexibility. This natural usefulness and work-ability is being broadened by the development of new, quickly-interchangeable attachments.

Because "PAYLOADER" is the pioneer and leading line of rubber-tire tractor-shovels you can rightly expect that tested and proven attachments will first be available on the "PAYLOADER" line.

Two of the newest of these attachments, exclusive on "PAYLOADER", are the Ram Black-top Spreader and the Superior Side-boom—both practical and field-tested. Superiority in design, in proven features, in attachments and in Distributor service—all these make "PAYLOADER" the best investment in tractor-shovels for contractor, public body and material producer.



Modern Materials Handling Equipment

THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



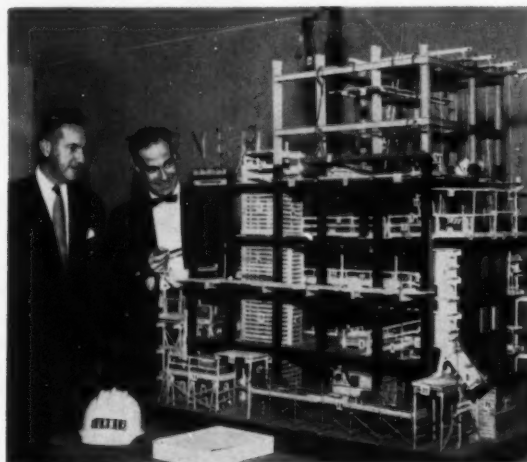
Accent on Safety

WHO SHOULD BE RESPONSIBLE for safety on the construction job? The workman? Foreman? Superintendent? Project manager? Or the home-office brass, like those shown below. Well the answer is, of course, that safety is everyone's responsibility. Yet too often the matter degenerates into buck-passing.

Insurance? Sure, it helps—after the accident. But only a fool believes he's safe because he's insured. And don't forget that today's tendency toward higher and higher awards and settlements in accident suits can affect your pocketbook profoundly.

One recent settlement, involving an instrument man hit by a haul unit while on the grade, approached a whopping quarter of a million dollars. Insurance immediately helped the contractor on this particular job, even though he'll be paying for it for years to come. But insurance didn't help the dead surveyor. Nor did it clean the conscience of those involved in the accident.

So, look around. Think safety and act safely. You'll find your operations improved, your profit increased, your sleep less troubled.



SAFETY AID—Model showing construction of structural steel and masonry building also points up safe construction practices. It was conceived and built by Eugene Pape, inspector for New York State Dept. of Labor, to illustrate safety requirements. Among the items shown are enclosed hoistway, railed floor openings, dust-tight rubbish chute, secure staging, vented heaters, proper scaffolding. Here, during Turner Construction Co.'s annual headquarters safety meeting, Turner Safety Engineer Fred Livingston Jr. shows some of the fine points to President H. C. Turner Jr.

The most exacting road construction ever attempted is under way at the \$22-million AASHO Test Road Project in Ottawa, Ill. This first of two articles tells how joint venture contractors S. J. Groves & Sons Co. and Arcole Midwest Corp. built up and graded earth embankments for the test road. A second article will describe the paving.

By ANDREW BORACCI
Associate Editor

INSPECTING THE WORK—Inspectors, engineers, and technicians follow every phase of the contractors' work.



Toughest Specs Ever Written Demand Precision Earthmoving

IT'S EARLY MORNING, and the job's just beginning to hum. Diesels whine then roar, and foremen bark orders. The big machines go to work, and it looks just like any other road job starting the day shift.

After a while a pair of neat, unsoiled men in white shirts stroll up to the embankment. Others join them in pairs and small groups until the clean white shirts far outnumber the khaki and denim work clothes of the men on the job.

If you were to visit the AASHO Test Road Project near Ottawa, Ill., early some morning, that's

what you'd see. It's probably the only road job on record where engineers, inspectors, and technicians—more than 200 of them—outnumber workers. They're on hand to make sure that the contractors—S. J. Groves & Sons Co. and Arcole Midwest Corp.—follow to the letter the most rigid and exacting set of specifications ever written into a roadbuilding contract.

Paving now is under way. The earthmoving was completed last fall. It was a job that demanded a high degree of construction skill—and exceptional patience. The contractors, though, knew what

they were in for. The problem was spelled out for them in a quaint paragraph in the job contract that read:

"It is hereby understood and agreed that the contractor will execute the work under this contract in such a manner as to take into account the experimental nature of the project and will cooperate with the engineers to the fullest extent."

Project manager Jack Healey saw no problem in this.

"We expected plenty of close control," he said. "After all, tests that will be made on the completed road wouldn't mean much un-



BUILDING EMBANKMENTS—Euclid scraper dumps a 6-in. lift of select embankment material on test strip. Scraper enters strip over a transition area, exits over another.

less construction of base and paving was as nearly perfect as possible."

But then Healey smiled, tilted back his hat, and added:

"I must admit, though, I'm often afraid to walk out on the job for fear I'll have to spend half a day shaking hands."

AASHTO purposely located the road some 80 mi southwest of Chicago because soil and climatic conditions there are typical of wide areas of the United States.

When completed, the test road will consist of six loops located along an 8-mi right-of-way. Half the pavements in each loop will

be made from portland cement concrete; the other half, from asphaltic concrete.

Four main loops will have 6,500-ft straight sections designed as four-lane divided highways. Parallel straight sections will be connected at the ends by banked turn-arounds.

Smaller loops will have 4,400-ft straight sections with turn-arounds and two traffic lanes. Straight sections of the six loops will contain 836 separate test sections with various combinations of surface, base, and subbase thickness.

The \$2.5-million joint venture

earthmoving and grading contract called for embankments 44 ft wide at the top with 4-on-1 slopes. Specifications required a high uniformity in density and moisture content. Material for the embankments came from three 7- to 8-acre borrow pits near the job where there was a variety of silty clays.

From the top down, borrow pits contained 1 ft of topsoil, a 4 to 5-ft strata of leached soil, a third strata of yellow brown clay, and finally gray clay.

Material specified for the bottom of the embankments was yellow brown clay. The top 3 ft of the embankments called for a core of yellow-brown clay retained by end sections of gray clay.

To move material the contractors brought in a wide variety of scrapers. These included Euclids, LeTourneau-Westinghouse Tournapulls, Caterpillar DW21's, DW-20's, and International Harvester TD-24's. Caterpillar D8's push loaded scrapers in the pit. The contractors brought in \$5-million of equipment to work all test loops simultaneously.

But building the embankments was a far from simple job. "I doubt whether many contractors will see anything to match it," says Healey.

Pits had to be opened so that large areas of each strata were exposed to permit taking classified borrow at any time it was needed for particular parts of the embankments. Engineers and technicians stationed at the borrow pits directed scraper movements. When a scraper arrived at the pit, a technician pointed out which strata to take from.

The material, too, had to be pure. That meant mixed loads—half yellow and half gray clay—were ruled unfit and dumped.

Technicians directed unloading of scrapers, too. Each scraper had to come onto the embankment over a transition strip because engineers would not allow equipment to turn or back up on a test section. These transition strips between the test sections served as approaches and exits from the road. They will be paved but not tested—too impure.

Scrapers dumped in 6-in. lifts. A fleet of 27 Seaman-Andwall Trav-L-Plants followed up scarifying and adding water at a controlled rate. Water came from 1,000-gal tanks fitted to John Deere farm wagons. Each Trav-

Base Tolerances Compare with Concrete Paving

L-Plant pulled along its own tank and wagon.

During early stages of the work, sheepfoot rollers followed up compacting the 6-in. lifts down to a specified 4 in. But roller pads tended to pull up the moist pulverized course. The contractors, with permission from the engineers, abandoned the sheepfoot rollers and switched to 15-ton four-wheel pneumatic rollers.

Technicians took cores from each lift. These were sent to an on-the-job laboratory to be tested for specified compaction. Testing took 3 hr for each core at first. But assembly-line improvements cut test procedures to 1½ hr. Contractors had to stop work until test results were known.

Placing procedure remained



SCARIFYING BASE—Fleet of Seaman-Andwall Trav-L-Plants pulling 1,000-gal water tanks pulverize each 6-in. lift of base material and add water at a controlled rate.



COMPACTING BASE—Caterpillar D8's pull 15-ton pneumatic rollers that compact 6-in. lift of embankment material to 4 in. Each lift is tested for specified compaction.



CUTTING FORM TRENCH—Cleveland Formgrader cuts trench for steel paving forms that will be placed to retain final lift of embankment material and used again for subbase.



SETTING FORMS—Workman sets string line for setting a line of steel paving forms.



GRADING BASE COURSE—Blaw-Knox subgrader removes excess base material to within $\frac{1}{8}$ -in. of specified grade. This is a tolerance normally reserved for concrete paving.

the same for the top 3 ft of embankments. Considerable care had to be taken in placing the various spreads of gray or yellow-brown material. Engineers and technicians directed this work closely.

To bring embankments to exact grade, paving forms were set and excess material was removed with a Blaw-Knox subgrader to a tolerance of $\frac{1}{8}$ in., a tolerance normally reserved for concrete paving.

Subbase Preparation

Preparation of lanes designed to be topped with concrete varied from those to be paved with bituminous concrete. Each got a sand-gravel "mulch," a bank-run type material that was washed and screened to get rid of impurities such as stones and grits. Remaining fine material then was run through a batch plant where grits were added to an exact percentage and the whole passed through a paver to be thoroughly mixed.

Mulch on the concrete side was the final work. For the bituminous sections, mulch will be topped by a course of crushed rock. Mulch courses for concrete sections varied in thickness from 3 to 9 in.; for the bituminous sections, from 4 to 16 in.

Engineers ruled out more than a limited amount of equipment riding over the mulch subbase. That brought up the question of how the mulch could be placed. Groves-Arcole Midwest worked out a placing technique that limited machinery traveling over the mulch course to one tractor.

A Caterpillar D8 pushed a Jersey spreader over the subbase. Material dumped into the spreader from a two-stage conveyor belt set up on an Apsco spreader that rode on the ground parallel to the embankment.

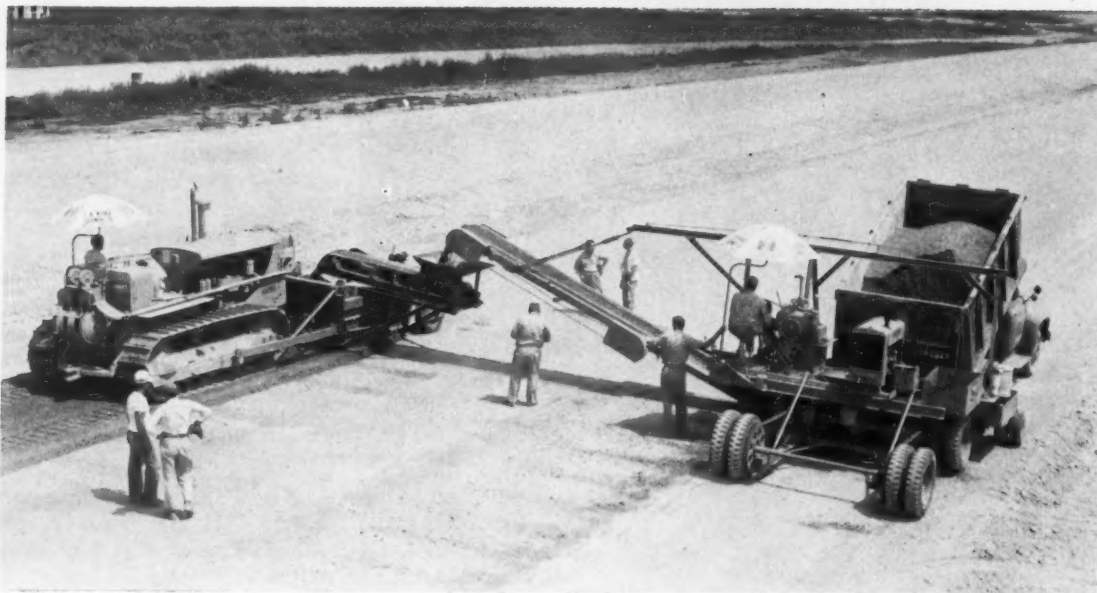
Procedure was identical for mulch placing on the bituminous sections. But after crushed stone is added, pneumatic rollers will do the compaction. This phase will be part of the paving contract.

Because of rigid control and constant supervision, the contractors had their hands full throughout the earthmoving work. But they regarded the project as an unique experience.

"You can say it was an interesting job," said Healey. "But its not one many contractors will see—or, I suspect, even want to see."

The Test Road, sponsored by

Team of Five Rigs Places Blended Subbase Material



PLACING SUBBASE—Truck rides parallel to strip and dumps material into Apsco spreader. This feeds the material into a two-

stage conveyor that loads it into a Jersey spreader. With this technique, only a single tractor rides over the subbase course.



BLENDING SUBBASE MATERIAL—Fines are screened out of bank run material, washed, then placed back with paving machine at a controlled rate to make subbase material.

AASHO TEST ROAD ...

continued

the American Association of State Highway Officials, is being administered and directed by the Highway Research Board of the National Academy of Sciences, National Research Council.

Financing comes from the 48 states along with the District of Columbia, the Territories of Hawaii and Puerto Rico, the Bureau of Public Roads, the Automobile Manufacturers Association, and the American Petroleum Institute, with a helping hand from the Department of Defense.

Findings of the tests will play important roles in design of future highways throughout the country. They also will help determine what size and weights of vehicles will be permitted to operate on these roads.

The Supervision

Some of the people in charge of the project include W. B. McKendrick, Jr., project director for the Highway Research Board; Chet Farrell, job superintendent; and Bill Watson, superintendent, for Arcole Midwest. Healey will remain as project manager for Groves, who will do the paving for the project. The paving will be completed this summer.



HIGH TOWER—Pile foundation carries 125-ft support tower. Above this a central tower extends another 107 ft to control 122-ft boom and strut for counterweight.

Tower Crane Erects Steel Mill

A TOWER CRANE, especially designed for the job, is erecting a steel mill in Australia.

Broken Hill Pty. Ltd., Australia's largest industrial concern, set up the crane to reconstruct blast furnaces at one of its plants. Engineers of Newcastle Steel Works, designed and built it.

The crane operates from a tower 125 ft high and 20 ft square. The tower sits on a pile foundation during erection.

On top of the tower the moving part of the crane consists of a 107-ft central tower, with a 122-ft boom on one side and a strut to carry the counterweight on the other side. The mast can slew 195 deg in each direction from its normal position, or a total of 390 deg if it starts from an extreme position. Slewing speed is one revolution in 5 min.

The boom can operate at a

minimum radius of 25 ft. From this position to a 60 ft radius, the lifting capacity is 60 tons. At the maximum radius of 155 ft the capacity is 15 tons. An auxiliary hoist on the same boom has a capacity of 12 tons.

The counterweight rides on a long strut, well out on the opposite side of the mast from the main boom. Both the strut and the tie that connects it to the top of the mast are pin-connected to the mast. An auxiliary jib, pivoting from the top of the mast, erects the counterweight.

The operator's cabin and hoist mechanism are located at the base of the tower. The three lead lines from the winches extend up the fixed tower and through a 32-in. dia hole to the revolving mast and boom. The auxiliary hoist line passes through a pipe on the axis of rotation, with the main hoist and luffing lines passing one on each side. When the crane slews to the maximum angle, the outer ropes just touch the tube, with the center rope remaining on the axis of rotation.

The main hoist has a maximum lifting speed of 7.4 fpm and the auxiliary hoist can move at 45.5 fpm. The luffing speed is 12 min from maximum to minimum radius. The entire structure weighs 300 tons.



BIG CAPACITY—Crane, with capacity of 60 tons, easily lifts blast furnace parts.

Frictionless Deflectors Simplify Pretensioning



CASTING YARD—Three lines of girders, with three or four girders in each line, are pretensioned and poured on 260-ft bed. On left line here, units are steam cured.



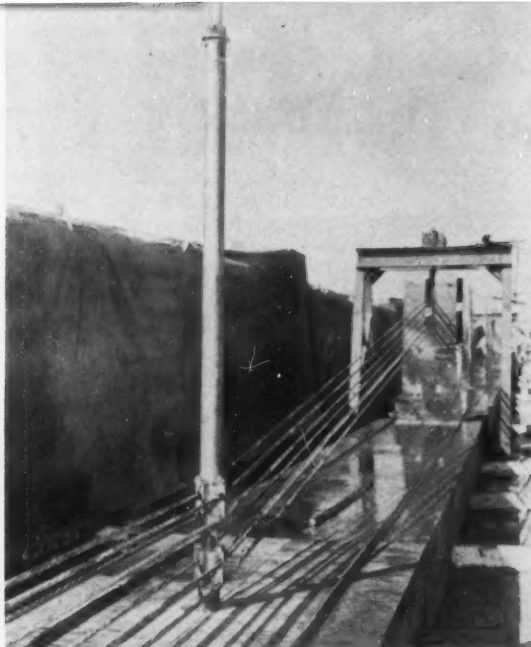
ROLLER DEPRESSER—Anchored to casting bed, unit holds 7/16-in. strands down.

Needle - bearing rollers guide draped prestressing strands around deflection points. After tensioning and before concreting, they are replaced by cheap units.

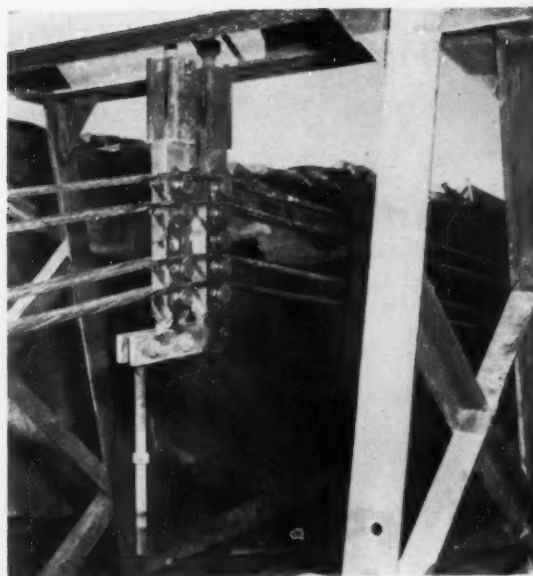
SIMULTANEOUS PRETENSIONING of a line of concrete girders containing parabolically draped strands can be a troublesome thing. It can be a killer if uniform tension must be achieved throughout the length of the long prestressing cables.

Each time the strands change direction to go from top of girders to bottom and back again, some tension is lost through friction at the deflection points. This results in uneven tension within each strand. It is for this reason that such girders usually are precast, then post-tensioned individually.

Usual procedure wasn't good enough, however, for Heldenfels Brothers, Corpus Christi contractors. Faced with the task of prestressing 223 draped-strand girders up to 70 ft long, they devised almost friction-free deflectors that made pretensioning successful and economical. Needle-bearing multiple rollers at deflection points solved the friction problem. And an inexpensive hook de-



HOOKE DEPRESSER—Expendable unit is substituted for roller assembly. Paper tube covers upper pipe so it can be salvaged.



ROLLER SUSPENDER—Similar to depressers, these units are hung from tower to raise the strands between ends of adjacent girders.

vice, substituted for the rollers after stressing and before concreting, permitted salvage of the rollers to solve the cost problem.

Heldenfels worked up the ingenious procedure for a \$2.7-million interchange job in connection with a new bridge over the entrance to Corpus Christi harbor. While the project calls for many types and sizes of prestressed girders, 165 of them at 60-ft length and 58 at 70 ft caused the most worry.

Both types of girders are modified I-shaped units 20-in. wide. The 60-footers are 45 in. deep and weighs 15 tons. The 70-ft units, 2 in. deeper, weigh in at 20 tons.

Specs call for 40% of the prestress force to be applied through parabolically draped cables. This means, generally, that eight, ten, or eighteen 7/16-in. strands must be deflected from the straight, end-to-end path they tend to assume during pretensioning. And the final prestress force, after initial loss, is 490,000 lb and 690,000 lb in the 60 and 70-ft girders.

Such large forces are hard to deflect. It is even harder to obtain them as uniform values along three or four structural units cast end to end. Ordinarily, friction at the deflection points causes over-stressing of the strands at the jacking end of the casting bed and a decreasing tension toward the anchor end.

So Heldenfels engineers B. B.

Mabry and Lewis Jones practically eliminated friction by devising needle-bearing roller assemblies for points where strands must change direction. They adopted needle bearings because of the heavy loads combined with a small 2-in. vertical spacing between prestressing strands.

Two types of deflectors are needed. One type, at girder third-points, holds prestressing strands down near the bottom of the unit. The other, set between end bulkheads of adjacent girders in the casting line, holds strands up near the top.

The third-point deflectors con-

sist of a 1 3/8 x 3 1/2-in. steel bar in which are set a series of 1 1/2-in. dia rollers on 2-in. vertical centers. Rollers project from each side of the bar and the ends are grooved to hold pairs of prestressing strands.

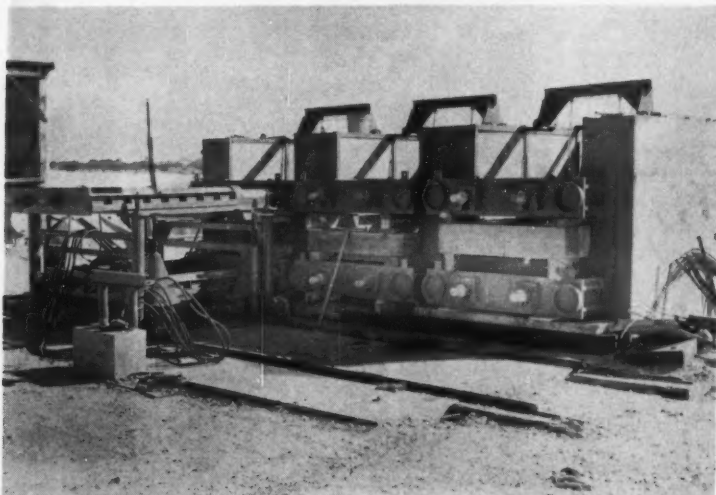
Double clevises, with a threaded rod between, hold the deflector to a steel anchor rail embedded in the concrete of the casting bed. Turning the threaded rod adjusts the deflector for vertical alignment. A turnbuckle hooked diagonally between anchor rail and deflector adjusts the unit longitudinally.

The anchor rail to which the



DRAPED STRANDS—Tension cables go up and down throughout length of casting bed, yet rollers at the deflection points cut friction so much that stress varies only 3%.

Stressing Calls for Powerful Units



JACKING APPARATUS—Massive jacking posts are faced with steel to take reaction of transverse beams that hold stress in strands when jacks (on carriage, left) are moved.



HYDRAULIC POWER—Pump that actuates prestressing jacks is mounted in shed at head of bed, so operation can be coordinated easily. Pressures range up to 7,000 psi.

deflector is bolted is punched with 1-in. holes on 12-in. centers. Location of the hold-down can thus be varied. Also, deflector load can be spread over more bed area by hooking to a $1\frac{3}{8} \times 4\frac{1}{2} \times 36$ -in. filler plate bolted into two or three holes.

Two similar strand deflectors elevate the prestressing strands between girders. The paired deflectors are set adjacent in line,

suspended from a steel-frame tower. Where eight or ten strands are handled, tower framework consists of 4-in. angle-iron legs cross-braced by 2-in. angles and topped by two parallel 8-in. channels, which hold the deflector bars. These towers are designed for a 50,000-lb load. Similar but stronger towers, designed to take 104,000 lb, are used when 18 strands must be deflected.

Because the elevating deflectors are located in the open between bulkhead forms of adjacent girders, they are easy to salvage for re-use. But those at girder third-points require a special technique:

After the draped strands are tensioned, a simple expendable hold-down costing only about \$3 is substituted for the expensive roller depresser. Bolted to the anchor rail alongside the depresser, the hold-down consists of a short length of $1\frac{3}{8}$ -in. extra-heavy pipe with welded lugs to hold the strands in position. Another length of pipe sits on this to extend above the top of the girder. A 6-ft long, 1-in.-dia bolt of high-strength steel passes through the superimposed pipes to hold them to the anchor rail. A greased paper tube fits over the upper pipe. Thus, after girder concrete has set, internal bolt and upper pipe can be salvaged, leaving only the short lugged length of pipe embedded in the pour.

The prestressing bed in which the girders are cast was designed by Ross H. Bryan, Nashville consultant. It is 18 ft wide and 260 ft long, capable of handling three lines of girders. Heldenfels casts and prestresses three 70-ft units or four 60-footers on each line, pouring one line every other day.

Concrete anchors at the ends of the bed are 6 ft thick and 30 ft long. From these the bed decreases to an 8-in. slab with three 18×36 -in. heavily reinforced grade beams directly under the beam lines. Design force per line is 800,000 lb at a center of gravity 36 in. above the bed.

Cast in the bed, continuous along each line, is a 1-in. rail to anchor the strand deflectors. It is designed to withstand a pull of 30,000 psi. Also cast in the bed, on 5-ft centers along each beam line, are screw anchors for aligning girder forms.

The casting bed is fitted with a false bottom, set 12 in. above the concrete slab. Made of 2×12 -in. lumber decked with $\frac{3}{4}$ -in. plywood, the false bottom is made in sections that can be removed easily to give access to the deflector anchor rail.

At the end of the bed are four jacking posts. Each is 2 ft wide by 6 ft thick and 6 ft high. Stressing equipment consists of four

WHEN THE PROBLEM IS

BIG ROCK

AND PLENTY OF IT

8,000 feet up Mt. Shasta in northern California, Everitt Memorial Highway is being extended to Panther Meadows where a new ski resort is under construction. Timber is being cleared to make way for the six miles of new road; overburden is being moved; crushed aggregate is being brought in. But the toughest job of all is wrestling with tons of big rock. No wonder J. W. Briggs & Associates are using a fleet of Caterpillar track-type Tractors—seven D8s and three D7s.

"We especially like those Cat-built U-blades," says Supt. M. S. McMillan. "They really stand up on this rock." As with any piece of big yellow equipment, the reason for this better wear is better design and manufacture. The No. 8U Bulldozer shown on the D8 in the picture, for instance, has cutting edges made of special "Hi-Electro" hardened steel. Powering this 11' 11" blade is the 191 HP (flywheel) Cat D8 Tractor.

Every detail of construction of this famous machine aims at easy handling of tough work: roller rims are forged of selected deep-hardened steel; track pins are made of selected medium carbon steel, "Hi-Electro" hardened; diagonal braces on the track roller frames are heavy steel forgings welded to nearly half the length of the frames.

Dozens of other features attest to the ruggedness of Cat-built crawler equipment and attachments. Get the whole quality story with a no-holds-barred demonstration on *your* toughest job. Call your Caterpillar Dealer today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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**WHEN THE GOING
IS REALLY TOUGH**

ENGINEER'S FIELD REPORT

PRODUCT

RPM DELO OIL

FIRM

M. M. SUNDT
CONSTRUCTION CO.
Tucson, Arizona

RPM DELO OIL ends 5 years of engine troubles



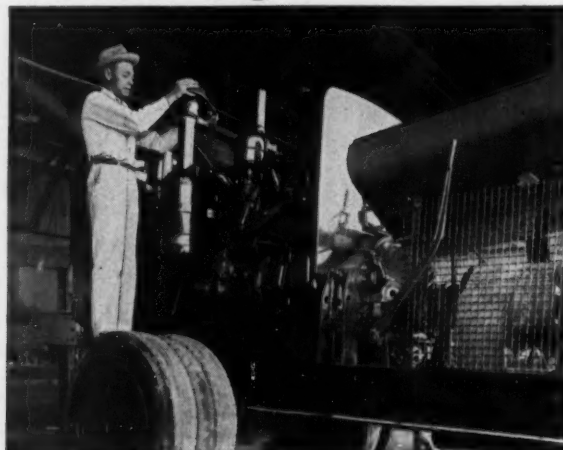
The pan has never been off the Caterpillar D7 engine of this Link-Belt Speeder shovel in 7 years, using RPM DELO Oil. Only repair was a single valve job—no other parts replaced. William Naumann, Sundt's Operations Manager, says, "We tried nine different major brands of oil in five years, trying to lick the frequent breakdowns that slowed our operations. Sometimes, main and rod bearings even froze solid on the crankshaft. We changed to RPM DELO Oil seven years ago, and, since then, have never had any engine troubles due to oil failure. We now use RPM DELO Oil exclusively in our 22 heavy-duty engines."



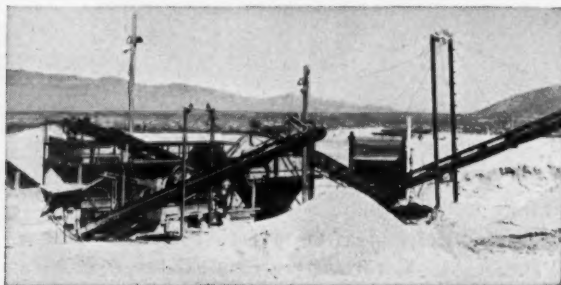
For More Information about this or other petroleum products or the name of your nearest distributor, write or call any of the companies listed below.

TRADEMARK "RPM DELO" AND DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey



Lubricated with RPM DELO Oil, this Caterpillar D13000 portable unit powered a rock crusher of M. M. Sundt Construction Co. for a total of 8976 hours before overhaul. "In spite of extremely dusty conditions the only time the engine was touched was to replace a head—no other repairs were necessary," reports master mechanic Billy Gray, shown replacing air cleaner on unit following overhaul.



Austin 101 rock crusher, powered by Caterpillar unit described above, works 20 hours a day at firm's materials stockpile outside Tucson. Company works year around on road paving, grading, foundations, building construction.

Why RPM DELO Oils reduce wear —prolong engine life



- Oil stays on engine parts—hot or cold, running or idle
- Anti-oxidant resists lacquer formation
- Detergent keeps parts clean
- Special compounds prevent corrosion of bearings
- Inhibitor resists crankcase foaming

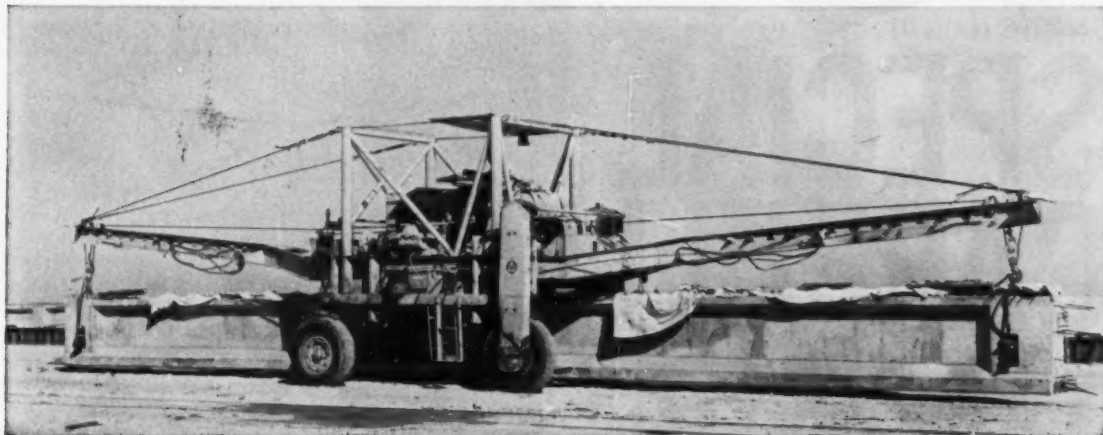
STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA COMPANY, Denver 1, Colorado

Girders Require Special Handling



ROLLER HOLD-DOWN—After removal of forms and the apparatus that hold strand depressers during pour, device is placed to

hold girder down while jacks release tension. Upon release, girders slide about 3 in. along bed and have tendency to camber suddenly.



GIRDER CARRIER—Altered straddle carrier handles 60 and 70-ft prestressed units, which weigh up to 20 tons. Long booms have

been added fore and aft to carrier so it can pick up girders by their ends. Winches on the machine operate three-part load lines.

150-ton Rodgers hydraulic jacks. Because the girders contain straight strands as well as the draped strands, jacks are mounted in super-imposed pairs. Thus they can stress the strands in any combination desired.

Jacks are mounted in a wheeled carriage riding angle-iron tracks across the head of the bed. Vertical adjustment is provided by 2-in. screw jacks and by coiled springs, which are $3\frac{1}{2}$ in. OD and made of $\frac{3}{4}$ -in. stock. The

springs are mounted at each corner of the carriage to absorb any wracking. Otherwise, with up to 400 tons being applied, there would be danger of bending jacks or carriage with forces not parallel to the jacking frame.

The draped strands for a line of girders are stressed first, before the straight strands. To stress the former correctly at all points along the girders, Heldenfels has found it necessary to set the temporary strand depressers

about $\frac{3}{8}$ in. below the desired center of gravity at the jacking end of the bed and $\frac{3}{8}$ in. above at the anchor end. Reason is that, even with the roller deflectors, stress is slightly higher (3%) at the jacking end. However, this is well within the specified tolerance of 5% variation.

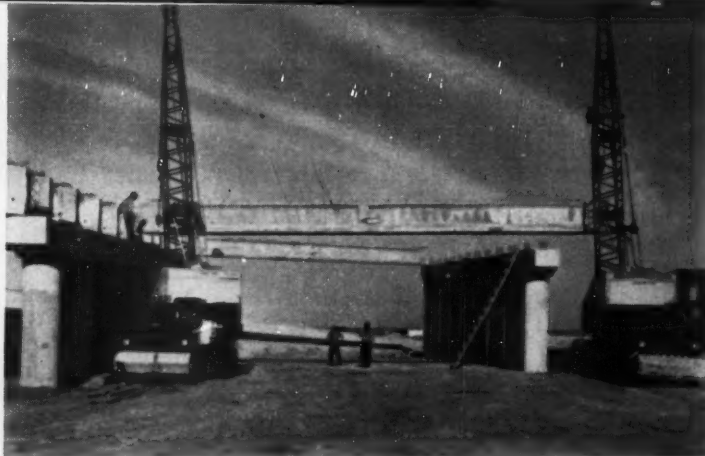
After the jacks have applied about two-thirds of the load, operations are momentarily halted while the draped strands are adjusted to the desired center of

FRICITIONLESS DEFLECTORS...

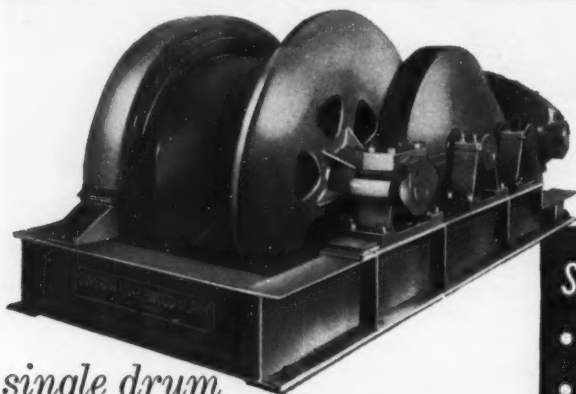
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gravity. Then the jacks give them their full tension. If at this time the strands do not have the proper stress, further variations or equalizations of tension are obtained by horizontal adjustment of the strand deflectors through their turnbuckles.

Elongation of strands is checked by Ames-dial extensometers at three places in each girder being prepared. After checking, the ex-



FINAL POSITION—Two cranes team up to set the girders atop the bridge piers.



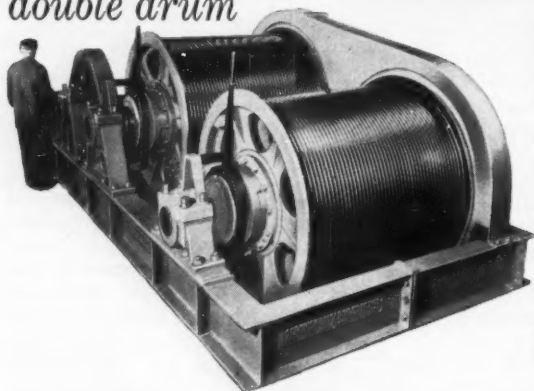
single drum

SPECIAL CARPULLERS

Specify

- load
- speed
- special conditions

double drum



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consult
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Write for
New 24 page
Bulletin C-616

Superior—Lidgerwood—Mundy Corporation

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pendable strand depressers are substituted and the roller assemblies removed. Then the strands are given a final tension check. Final stressing operation is to place and tension the straight 7/16-in. strands, of which there are 24 or 26 per girder.

Forming and pouring the girders is relatively routine. But to prevent sudden excess camber, specs require that the completed castings be held down at mid-point while the jacks release the strands. Because the girders slide along the bed about 3 in. during this procedure, Heldenfels devised a roller hold-down.

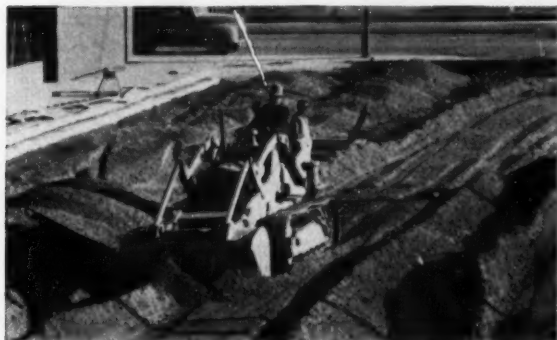
The device consists of bearing plate and roller on top of the girder beneath a 3½-ft transverse beam made of paired 6-in. channels. A vertical rod connects each end of the beam with a similar one beneath the girder. The lower beam is bolted to the deflector rail cast in the bed.

With the hold-downs in place (and after the girders have steam-cured to a minimum 4,000 psi compressive strength, usually in 48 to 72 hr), the jacks release draped and straight strands simultaneously. Released strands are burned off, hold-downs are removed, and a 35-ton Northwest crane lifts the castings from the bed. A modified straddle carrier moves the girders to storage, where they are further cured under wet cotton mats until they are six days old.

Girders are delivered to erection site after the concrete has reached a 5,000-psi strength. They are hauled on a special pole-type trailer with oscillating rear axle and shop-built fifth wheel on the truck to minimize torsion. Two 25-ton Bucyrus-Erie truck cranes set the girders in place.

"The No. 933 TRAXCAVATOR is the only tool for us when we're working in tight corners"

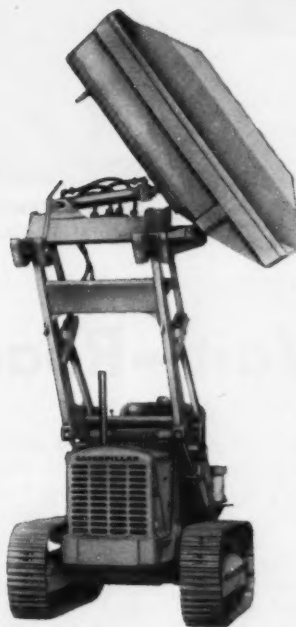
THAT's the word from Deane L. Jensen of Long Construction Company, Inc., Billings, Montana. Operator C. L. Clark agrees. "It's a nice little rig. Handy for an operator because you can do anything with either hand. You can operate the bucket with the right hand and shift with the left. Loading out of a bank, I've loaded as high as 80 cubic yards an hour. I've backfilled in buildings in places so small you had to have the bucket clear up to turn around. Had it in places 24 feet square with a wall all around."



In the pictures on this page you see Mr. Clark and his Cat No. 933 Traxcavator working on a parking lot, street and driveways for the Fair Lane Shopping Center in Billings. The "nice little rig" scoops out dirt for loading onto trucks, spreads gravel for street foundation, dumps trash. 4,500 cubic yards of material were brought here by truck and spread by the No. 933. The Traxcavator sandwiched in this work with other construction jobs in the area for Long Construction Co.

See a demonstration of the No. 933 right on your job. Call your Caterpillar Dealer today. And after the demonstration, have him explain how his expert service and factory-quality replacement parts will protect your investment in Cat-built equipment.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



The No. 933 offers a standard bucket of 1 cu. yd. capacity. Also available, as a directly interchangeable attachment, is this new $1\frac{1}{8}$ cu. yd. *Side Dump Bucket* which dumps to the left as well as forward.

CATERPILLAR

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**HARD-WORKING,
LONG-LASTING
LOADER VERSATILITY**

Normal traffic and construction machinery share an existing highway during a road relocation project. Keeping the motorists happy and getting the job done at the same time poses a major public relations problem for West Virginia contractor.



TRAFFIC JAM—Lines of autos wait at each end of job for chance to pass. With machines working right on existing highway only single lane traffic is possible. During blasting operations all traffic stops, occasionally for as long as 2 hr.



DOZER OPERATION—Cat D9 bulldozer working high on cliffside loosens shale with its ripper, then pushes rock over edge of cliff so that shovel below can get at it.

Cars Wait—Road Crews Rush Job

PUBLIC RELATIONS is a problem when a roadbuilder has to clog a busy highway with machines and blasted rock to get a new job started.

V. N. Green Co. of Charleston, W. Va., has to cope with long lines of impatient motorists on a Wellsburg, W. Va., road job. The contract calls for eliminating a bad hill and curve on a 2.3-mi section of Route 2. Green's crews have to set their machines on the existing road to start the new excavation. And this means blocking traffic.

The contractor does his best to keep the public informed of the reasons for the delay by signs on

the road and by newspaper articles. But this doesn't make motorists any happier about waiting in line to pass the site.

The only way to break the bottleneck is to get the job done quickly and get out of the way. And that's exactly how Green is solving the public relations problem.

During the winter they worked 10 hr per day. Since the arrival of warmer weather they have been running two shifts. They started the job in February and expect to finish the earthmoving this summer.

The section that is causing the traffic jams is a 280,000-cu yd

side-hill cut alongside the existing road. The cut is half-way up a mountain-side so the only working space available is the old highway, and the contractor's machines have to share it with normal traffic.

Green is attacking the big cut from above and below. On top, a Cat D9 bulldozer with ripper on the back has cut a narrow road across the face of the hill, parallel to and higher than the existing highway.

From this working ledge the D9 loosens the shale with its ripper and pushes it over the side of the hill.

continued on page 112



SHOVEL OPERATION—Northwest 2½-yd shovel works at base of cliff to load loose rock into fleet of four Euc trucks. Trucks haul waste material to nearby disposal area.



AIMING HIGH—Ingersoll-Rand Crawl-IR drill adapts itself quickly to any angle.



AIMING LOW—Next hole points down. Maneuverable rig drills, gets off road fast.



Approximately 40 sections of Thermoid Powerflex Hose, ranging from 15' to 12' in length, and from 3/4" to 1 1/2" in diameter are used on this Oliver Super 88 Diesel Tractor equipped with a Ware Hydra-Trencher.

Hose that's built to take it!

On a recent sewer installation, Lehigh Foundation, Inc., Dresher, Pa., dug 40,000 feet of trench. According to Mr. Douglas Sammak, President: "We dug this trench eight hours a day, five days a week on hard ground conditions, and we have over 2,000 hours registered on the machine. The Thermoid Powerflex Hose stood up under terrific punishment on this job."

Take a leaf from Mr. Sammak's book. You, too, will find that using Thermoid Powerflex Hose helps you keep maintenance costs and downtime to a minimum . . . your operations moving on schedule.

Your local Thermoid Distributor can help you select the hose best suited to your needs.



Thermoid Company
Trenton, New Jersey
Nephi, Utah

ROAD CREWS RUSH JOB...

continued

At the bottom, a waiting 2 1/2-yd Northwest 80D shovel loads the rock into 22-ton Euclid trucks. The four Eucs haul it to a nearby disposal area.

The lower part of the cut is solid rock that requires more violent treatment. Here Green is drilling and blasting.

An Ingersoll-Rand Crawl-IR drill, powered by an I-R Gyro-Flo 600 compressor handles the drilling. It works well in a situation like this where almost every hole is at a different angle and fast set-up time is important. Because it is self-propelled and highly maneuverable it can sit on the road to drill a hole, then move away fast. This helps to keep traffic moving.

Many of the holes are horizontal or even pointing upward, so Green cannot charge them with a loose blasting powder. They use Dupont 40% gelatin dynamite.

All traffic has to stop during the blasting and for as long afterwards as it takes to clear the road. The crews work fast to get at least one lane open. So far the longest traffic delay has been 2 hr.

While the equipment is working on or near the road only one lane of traffic can get by. This is a busy highway, and it takes smooth coordination between the flagmen to keep traffic from piling up at each side of the job.

The fill section of the job is easier. It is well off the existing road so there are no traffic problems. The shallow fill requires only 27,000 cu yd and is a relatively routine operation. A Tournapull scraper, Cat grader and D8 tractor with sheepsfoot roller handle the fill with little trouble.

Green and Charleston Construction Co. of Charleston, W. Va., have a joint contract for \$1,188,517 to relocate this piece of road. Green does the earthmoving, and Charleston will do the paving. Green has an additional \$168,000 contract for sewers.

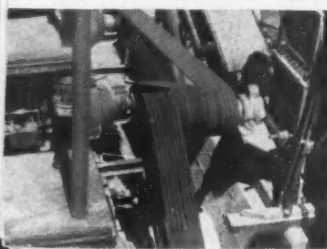
Route 2 is the main road north from Wheeling, and it carries heavy traffic. This relocation will iron out a bottleneck at Wellsburg, 20 mi north of Wheeling.

Wes Peters is project manager for Green. Chuck Connor is office manager.

Cut costs with
Thermoid Conveyor Belts



. . . and Thermoid Multi-V Belts



"We have a very satisfied operator!"



It takes *both* men and machines to get a tough job done by contract date. That's why you get better production if a machine is good enough to satisfy the experienced operator who handles it. Asst. Supt. W. B. Siviter of Birsch Construction Corp. of Norfolk, Va., reports he has a very happy operator. It's a safe guess that the machine in question is a CAT* Motor Grader—like the rugged No. 112.

Mr. Siviter said it was his operators who recommended buying the maneuverable and dependable No. 112, shown windrowing near Smithfield, Va., on Route 10. The job of widening this narrow sand and dirt road to 16' of hard surface called for an average of 8' of widening. Says Supt. Siviter of his Caterpillar Motor Grader: "Does everything we expected it to do!"

Operators will be more pleased—and efficient—due to improvements on the No. 112. An adjustable seat and a taller cab with better ventilation and more

window area than ever before assure less operator fatigue, more production.

The Cat No. 112 Motor Grader also has newly designed front axle components for extra strength and longer life. As before, its frame is made from special channels, with box section reinforcements to handle the toughest work conditions. And its Caterpillar Diesel Engine's reputation for lugging hard without fouling is well earned.

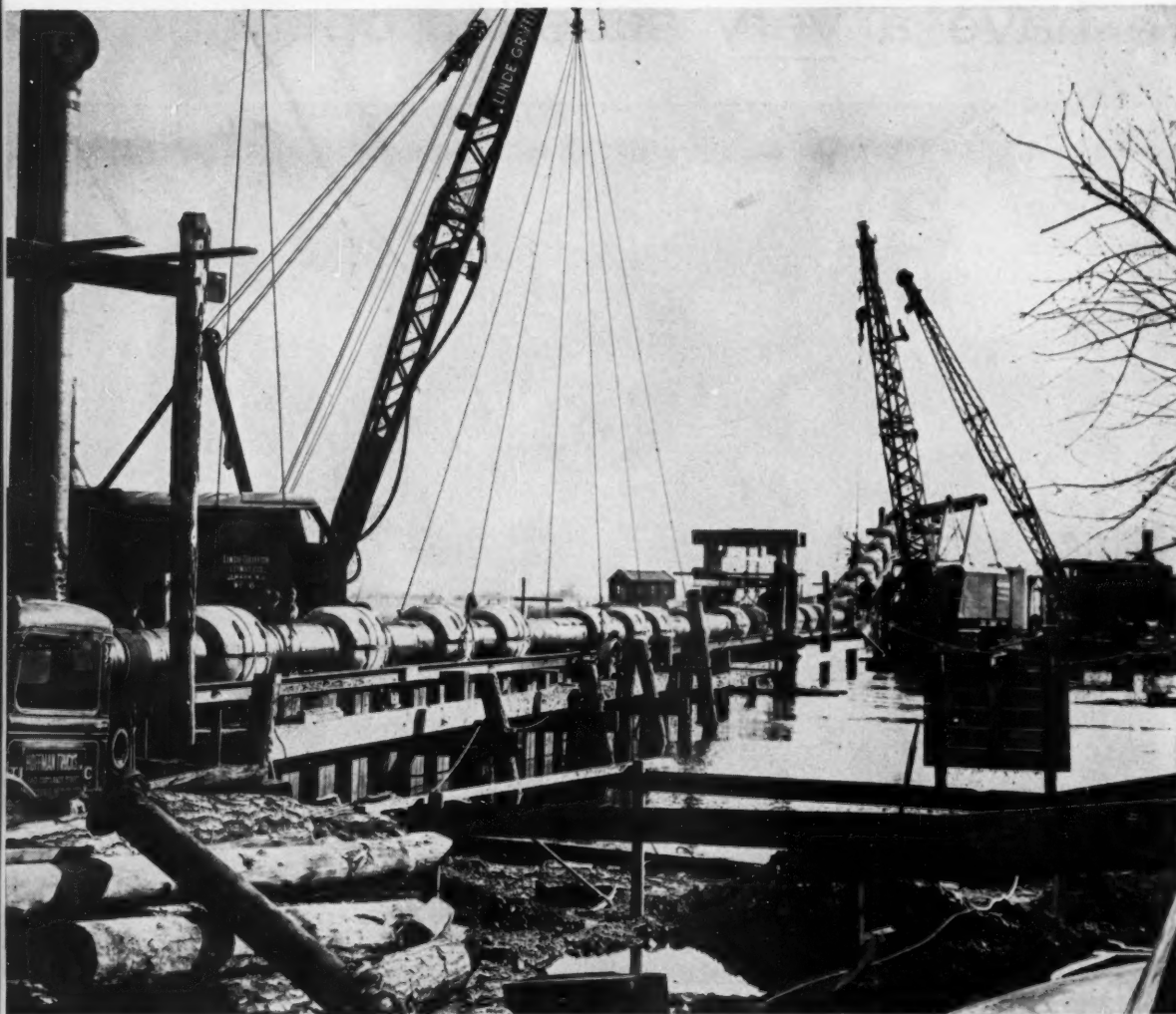
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ASSEMBLED AND READY—Four cranes and a winch rigged to a gantry in the river get set to lift the pipe so that supporting cross members in the falsework can be cut away.



COORDINATING—Supervisor directs the lowering job by sound-powered telephone.

Cranes, Winch Lower

ELABORATE PLANNING and close coordination made it possible for Linde-Griffith Construction Co. of Newark, N. J. to complete a pair of unusually complicated pipeline crossings on schedule and without major difficulties.

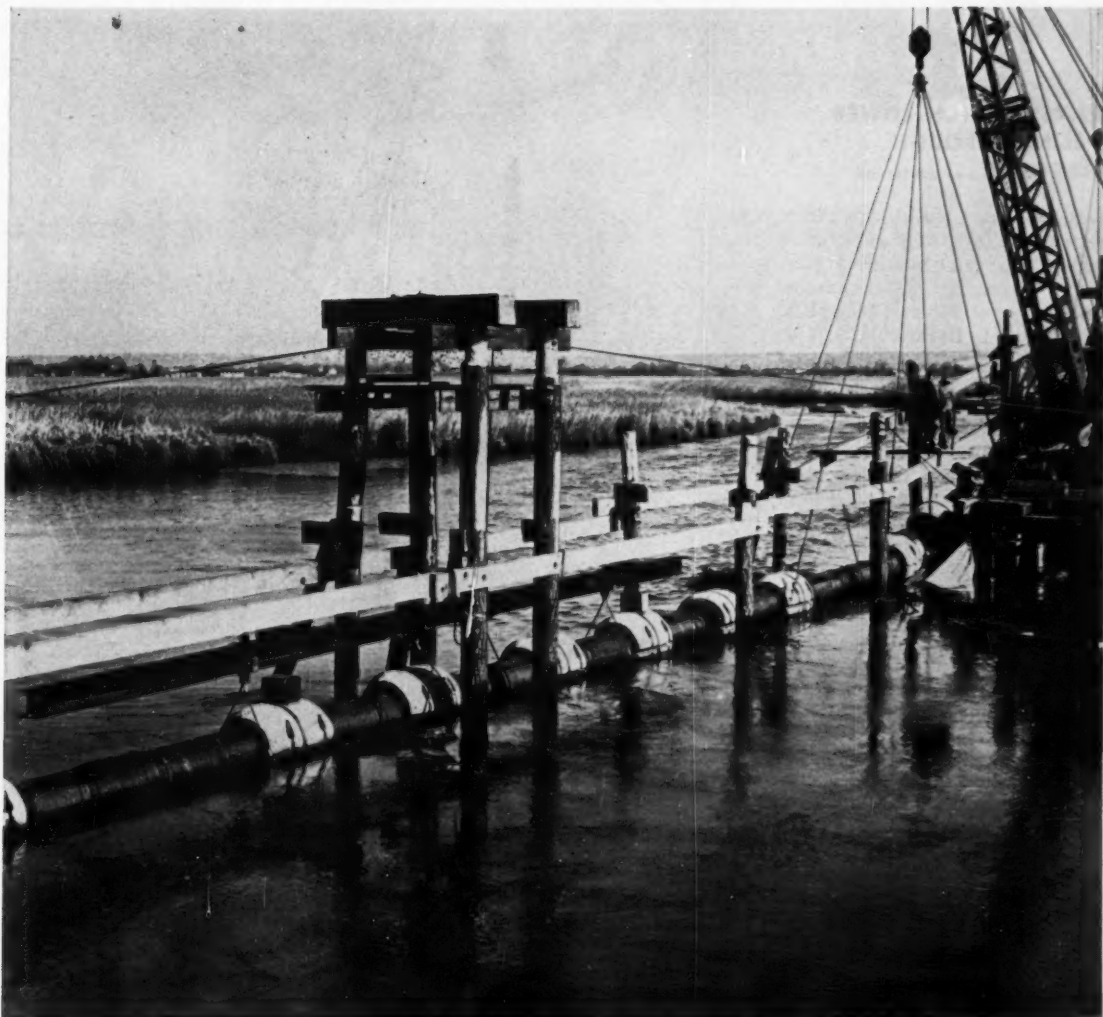
The job called for placing two 330-ft lengths of 24-in. steel pipe for a gas transmission line in New Jersey. One was across the Passaic River; the other, across Berrys Creek.

Because both crossings were designed with right-angle risers fitted with drip pots, the contractor could not simply pull the pipe

across the river and drape it over the bottom; they had to lower it with minimum deflection into a trench.

Linde-Griffith also had to assure the stability of existing structures. At Berrys Creek a water main ran only a few feet away from the pipeline. Along the unstable banks of the Passaic River, they had to protect several buildings.

In addition, there was a problem of interference with navigation on the Passaic River. The contract specified that only half of the river could be closed for preliminary construction. And



GOING DOWN—Pipeline descends in 3-in. steps until it reaches the water. Then, steps are increased to 6 in. because the chances of excessive deflection are reduced.

Pipeline Through Falsework

the contractor had only two days to close the other half, assemble the pipe, and place it.

Linde-Griffith decided to make both crossings by building timber falsework across the rivers, assembling the pipe on top, then carefully lowering it into a prepared trench. Where there was any danger of trench or river bank failure, they drove sheet-pile walls or cofferdams.

Fortunately, the construction schedule permitted Linde-Griffith to tackle the crossings one at a time. Crews moved in first on the Berrys Creek job, where the 250-ft-wide river runs through

open country and there was no need for providing temporary support for adjacent structures. But Berrys Creek offered other problems. Water was not deep enough to accommodate big floating derricks so timber trestles had to be built from each bank to support cranes. Each 70-ft-long trestle consisted of wood-pile bents capped and decked with hefty 12x12's.

Sheet Pile Cofferdam

After the trestles were built, the first major job was to build a 70-ft-long cofferdam on one side of the river to prevent deep

excavation for the pipeline's riser from disturbing a 12-in. cast iron water main that runs parallel to the pipeline only 20 ft away and up to 22 ft higher than the bottom on the trench. (This cofferdam was not required on the opposite side of the trench because the gas pipeline follows the same general slope as the water main, presenting no danger of slope failure).

Cofferdam design was based on several factors. It had to be as free as possible of internal braces to simplify lowering the pipeline inside. Yet it had to be strong enough to withstand the large

CRANES, WINCH LOWER PIPELINE THROUGH FALSEWORK . . . continued

lateral pressures resulting from the removal of 30 ft of excavation inside. To provide maximum cantilever strength, the contractor decided to use ZP-38 sheet piles, rented from L. B. Foster Co. With this piling, the cofferdam required only a single level of internal cross braces to resist the large lateral loads.

Before driving sheet piles, Linde-Griffith built a timber trestle. Crews first drove several bents of batter and plumb wood piles, then on top they erected a guide frame of double 12x12's. Sheet piles were set up in the guide slot created by two 12x12's.

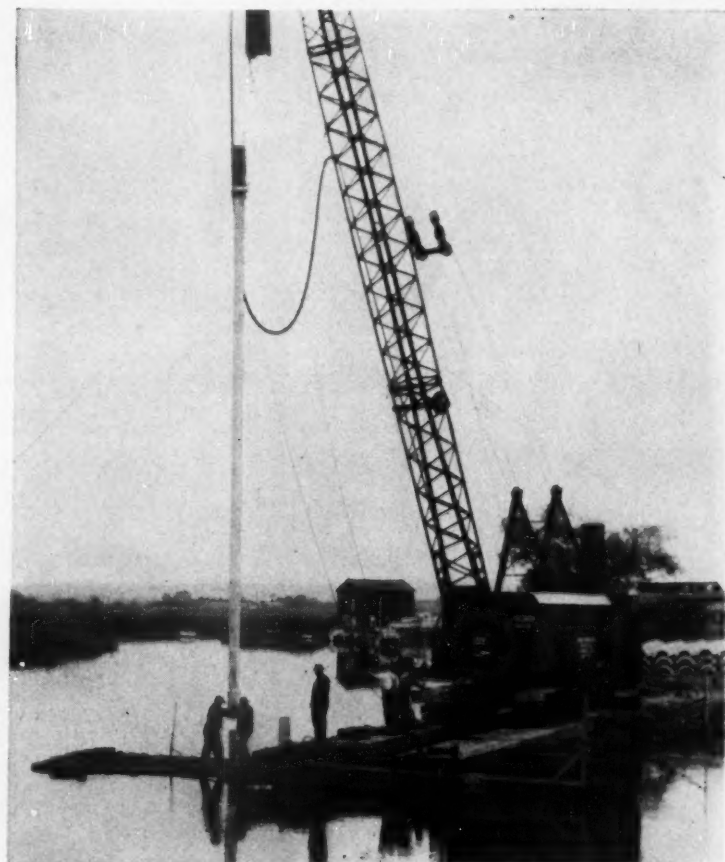
When an adequate stretch of sheet piles was ready, a McKiernan-Terry 9B3 steam hammer drove the line of piles in short increments to keep them plumb. Wherever a wood cross brace intersected the line of sheet piles, it was removed temporarily to make room for a sheet pile. Of course, this eliminated a support for the 12x12's so a bolt was driven through an adjacent sheet pile to replace it.

The 55-ft sheet piles were driven into the sloping river bottom, penetrating from 40 to 50 ft. Actually, two adjoining cofferdams were constructed. One was strictly temporary, designed to protect the water main nearby; the other was permanent, serving as a manhole for future servicing of the drip pot.

Foundation Piles

After the pipeline trench was excavated by clamshell, the contractor began driving permanent wood piles to support the pipe. Plans called for a series of two-pile bents 20 ft apart and capped with 12x12's. The big problem was cutting off the piles to exact grade underwater. Drivers could have done the job, but the tolerances were rigid, and underwater work is slow and expensive.

Instead, Linde-Griffith devised a method of driving the piles to exact grade so that no cutting would be required. Actually, it was a simple operation. A pile was driven almost to water level, then a special follower pile was brought out to finish the job. It



DRIVING PILES—Steel pipe follower pile fits over wood foundation pile. Face of follower bears elevation scale so wood pile can be driven to exact grade underwater.

consisted of a steel pipe fitted with a sleeve to cover the top of the wood pile. On the face of the follower, an elevation scale was marked so that an engineer could direct precise driving of the wood pile. The method saved a lot of time.

The next job was to spike the 12x12 caps to the piles underwater. And once again the contractor developed some time-saving techniques. Because the piles were not in perfect alignment, Linde-Griffith first took location readings at each bent. With this information, crews drilled holes in the caps at the exact pile positions so divers could place the caps easily.

Driving $\frac{3}{4}$ -in. spikes with a job-made hammer was another innovation developed by Linde-Griffith. Made of a 30-ft-long $1\frac{1}{2}$ -in. dia rod riding in a 2-in. steel pipe, the hammer was operated from above by crane. With this method, the pile caps went in fast and true.

With the cofferdam completed and the pile caps in place along

the entire river-bed trench, the contractor moved on to the next phase of the job—building a pipe-supporting falsework across the entire river. This falsework was simply a series of wood-pile bents 20 ft apart. The cross pieces on which the pipeline was assembled were at set elevations that conformed to the grade of the pile caps.

To prepare the falsework bents for receiving the pipe a sled was first built on top. It also helped later to lower the pipe and cradle it in the trench. This sled consisted of two lines of 8-in. longitudinal 42-lb I-beams tied together with notched wood cross pieces that served as saddles under the pipe. On this sled was placed the lower half of collar-like 1,000-lb concrete weights.

After the sled was prepared, 60-ft lengths of coal-tar enamel coated pipe were swung on to the falsework and placed in the wood saddles. Pipe joints were then welded, X-rayed, and coated. And finally, the upper halves of the concrete weights were bolted to

Crossing Requires Elaborate Preparation, Contractor Ingenuity



PREPARING PIPE—Workmen bevel end of pipe section with cross cutting machine before it is lifted into place on falsework.



ASSEMBLING PIPE—Cranes swing length of pipe coated with enamel onto falsework where joints are welded and X-rayed.

the lower halves, and the pipe was ready for lowering.

Placing Pipe

Handling the 330-ft length of heavy pipe was a tricky operation. Deflection tolerances were rigid, and the pipe weighed 120 lb per lin ft, not including weights.

Controlling the middle section of the pipe was a particular problem, because that point was beyond the effective reach of the cranes on the trestles. To solve this problem, the contractor erected a wood gantry over the pipe at the middle of the river and rigged it with a four-point pickup. The load line was extended to shore and connected to an anchored winch truck that handled about 15 tons of the total load.

Besides this gantry, there were four cranes assigned to the pipe lowering. Two big Manitowoc 3000 cranes stationed on the trestles each carried about 24 tons, a Link-Belt crane at the riser end of the pipe held 9 tons, and a Bucyrus-Erie steam crane on the

opposite end also carried 9 tons. All lifting shackles were connected to the sled I-beams to reduce danger of pipe rupture.

With signalmen communicating by telephone, the ticklish operation began. A slight strain was taken on the pipe by all rigs to free the supporting cross members in the falsework, and workmen cut away the wood cross members with a pair of Homelite chain saws. When all cross pieces were cleared, the signal was given to commence lowering. At first, the pipe was lowered in 3-in. increments. As soon as it reached water the chances of excessive deflection were greatly reduced, and the rigs increased the increment to 6 in. By proper coordination, the contractor was able to lower the big unit 31 ft in only 3½ hr.

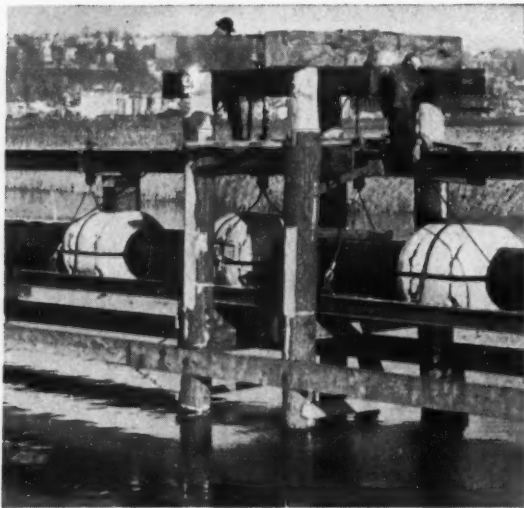
Trickiest phase of the lowering was maneuvering one end of big pipe into the temporary and permanent cofferdams. At the temporary cofferdam, which ran into the river, several sheet piles in the forward wall were removed to accommodate the pipe. Also, a

temporary lower level of cross struts was required to maintain bracing throughout the lowering. Top braces were removed, the pipe was lowered into the cofferdam, the top level was replaced, and then the bottom level was removed to allow the pipe to be lowered all the way.

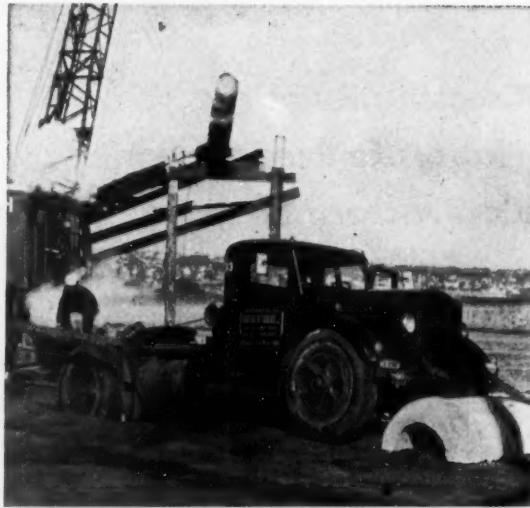
At the permanent man-hole cofferdam, the operation of placing and seating the riser end of the pipe was even more complicated. In fact, detailed preparations had to be made long before the actual pipe lowering. About 20 pieces of sheet piling were first driven to full depth in the required rectangular cofferdam pattern. The inside then was excavated and dewatered as two levels of internal steel braces were placed.

When the cofferdam was excavated, the contractor allowed it to fill with water as the two walers on the forward wall were removed. The next step was to extract the two center sheet piles on the forward wall so that a permanent cradle could be built

Special Rigging Handles Part Unreached by Crane



GANTRY—Pipe in middle of river is beyond effective reach of cranes so contractor handles it with wood gantry rigged to winch.



WINCH TRUCK—Load line from gantry runs to winch truck anchored by half sections of the collars that weigh down pipeline.

into them for securing the pipe when lowered. First the sheet piles were welded along their common interlock to make them act as a single unit, then a circular hole and saddle were built in near the bottom. When the saddle was completed, the sheet piles were severed along the saddle's horizontal diameter so that the cradle section could be placed at the bottom of the cofferdam to receive the pipe. This section was placed simply by driving both sections into the cofferdam, then extracting the top piece.

When the pipe was lowered on to the cradle, the top piece was inserted again, the cofferdam was dewatered, walers were replaced, and the cofferdam was allowed to fill up. In the future, whenever utility crews have to service the drip pot they simply will dewater the cofferdam with a small pump.

Methods of placing the pipe across the Passaic River were similar except that cofferdams were required at each end of the pipe to accommodate risers. Unstable slopes also made it necessary to drive sheet-pile retaining

walls parallel to the river to protect several structures.

More elaborate preparations were also required before navigation could be closed. At Berrys Creek, only small craft use the river, and most of them could pass under the falsework. But the contractor had only two days at the Passaic River to erect falsework, assemble the pipe, weld and X-ray, lower and backfill, then remove the falsework.

Norman P. Ahrens is superintendent, and Thor Peters is foreman for Linde-Griffith.



COFFERDAMS—Sheet pile cofferdam at end of crossing accommodates riser. Contractor also drove sheet pile retaining walls.



SEAT FOR RISER—Circular hole near bottom of cofferdam seats riser. Utility crews will dewater cofferdam to service drip pots.

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BREACH IN BEACH—Incoming tide rushes through funnel-shaped channel of Long Beach Inlet. In three futile attempts to dam the

gap, heavy tides washed out sand pushed into the inlet by dozers. Then Army Engineers closed the breach with hydraulic fill.

Big Dredge Plugs Ocean Inlet

ARMY ENGINEERS have closed a hurricane-rent gap in a narrow sand bar off the North Carolina coast with a big hydraulic dredge. After three attempts to dam the breach failed, the Civil Defense Administration called in the

Army Engineers, who concluded that hydraulic fill was the solution.

Cut by Hurricane Hazel in 1954, the inlet isolated a 2-mi strip of Long Beach, near Southport, N. C. The annual barrage of

hurricanes that hits this part of the Atlantic shore with special fury widened and deepened the channel. The inlet proper was 2,000 ft wide and about 10-12 ft deep when the Engineers arrived on the scene to plan operations. Another 500-ft-wide strip on either side of the inlet had been almost completely washed out by the repeated storms.

The Army Engineers put their bets on hydraulic fill to reduce the danger of washing out as the channel was gradually restricted. In the previous tries, swelling tides surged through the narrowed gap with increasing force and washed away thousands of yards of sand pushed into the inlet from both sides by dozers. Spreading out from discharge points on either side of the inlet and covering the entire width of the channel more uniformly, hy-



HYDRAULIC DREDGE—The Henry Bacon pumps 18,000 cu yd per day into the inlet. Its centrifugal pump maintains an average pressure of 30 psi in the 24-in. discharge line.

draulic fill prevented concentration of the incoming tides and minimized scouring of the fill material.

Because of the many uncertainties—weather, wave action, and tides to name a few—the Corps of Engineers could not reach an agreement with a private contractor. Besides, no dredge with sufficient pumping capacity was available in the area.

So they brought in the dredge Henry Bacon from their Savannah District to do the job. This dredge has a Skinner Uniflo 2,000-hp steam power plant. Its centrifugal pump has an average discharge pressure of 30 psi. Pressure in the 28-in. ID suction line varies from 12 to 20 psi.

Shallow water on the sound side of Long Beach forced the Henry Bacon, which draws 9 ft, to dredge a channel for the half-mile trip from the Intercoastal Waterway to the inlet. Then the dredge cleared out a basin for working room, as well as space for a quarter boat, a floating workshop, and other service craft.

Long Discharge Line

The 24-in. ID discharge line extended 3,500 ft from the dredge to the shore. The 40-50 ft sections were linked together with ball joints that allow 30-deg movement. The sections used on the shore portion of the line were only 12 ft long. Timber cribbing supported the overland portion where the sand was soft. Twisted cables held the interlocking sections together.

The discharge line branched to both sides of the inlet from a Y-intersection near the end. A simple adjustment of the regulating valve installed at this point diverted the flow from one side of the inlet to the other. The switch took about 5 min.

Special Spreader

A home-made spreader head broke up the discharge at each end of the line. The spreader head consisted of a deflection plate held in front of the stream to prevent segregation of the particles by size. A perforated container at the base of the plate caught the large chunks that sometimes reached the end of the line. Water pouring over the trapped chunks wore them down until they were small enough to pass through the holes.

The discharge stream contained 15% solid material on the aver-



DISCHARGE LINE—The 3,500-ft-long discharge pipe branches from a Y-intersection near its end to both sides of the inlet. Spreader heads at the ends of line break up flow.



BREACH CLOSED—Only 35 days after Army Engineers started work on the project, a massive dike containing 650,000 cu yd of material closes the gap in the offshore bar.

age. Tests showed the solids were 20% shell, 33% mud, 47% sand.

The Henry Bacon pumped about 18,000 cu yd per day. Fourteen days after the project was started, a total of 250,000 cu yd of material had been deposited—enough to close the inlet. The Engineers then brought the fill up to a peak of 15 ft above low water. Altogether, 650,000 cu yd of material went into the massive dike that repaired the work of the hurricane. The new section has a

minimum width above water of 560 ft at high tide, 900 ft at low.

The project was completed 35 days after the first dredged material was pumped into place. It was financed with Federal Civil Defense Funds at a total cost of \$165,000. Cost per yard of fill worked out to 26¢.

Directing the dredging operation were D. A. Gardner, Chief of Operations, Wilmington District, Corps of Engineers. G. G. Lewis was captain of the dredge.



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COMPACT LAYOUT—Concrete buckets from batch plant move along side-hill railway to position in line with dam. Suspension cableway carries the 20-ton buckets to dam.

Concrete Know-How at Elk Dam

EFFICIENT concrete production and placement is essential if a contractor is to be successful on a large gravity-type concrete dam job.

He doesn't have to come up with sensational new gimmicks. But he does have to take advantage of all available know-how and keep each phase of the production under complete control.

The joint venture of Arundal-Dixon-Hunken is achieving this kind of efficiency on their \$16-million contract with the Corps of Engineers for construction of a dam on the Elk River near Sutton, W. Va.

It takes a big set-up to produce the 600,000 cu yd of concrete needed for this dam. Each phase of the operation, taken by itself, is a tested and reliable method

that has been used before. Taken all together they add up to a well-planned production line.

The first decision that E. A. Hahn, project manager for the joint venture, had to make was where to put the plant. On a narrow straight-walled canyon he likely would have set it on top of the cliffs. In a wide valley he could have put it in a more convenient site at river level. The Elk River valley is somewhere in between those two extremes so Hahn set up a compromise plant.

He laid out his concrete and aggregate unloading area on the bank of the river because that is the most convenient point for trucks and trains to reach. He put the batch plant halfway up the steep valley wall, in line with the dam. This is close to the pouring

area so the mixed concrete has a minimum distance to travel. A 1,200-ft belt conveyor system connects unloading area with the plant.

To carry the concrete from plant to dam he built a suspension cableway across the entire valley. The main purpose of the cableway is to move concrete, but it also carries in forms and machinery.

The nearest source of aggregate that is acceptable to the Corps of Engineers is 120 mi away near Morgantown, W. Va., and the cheapest way to bring it to the site is by rail. The bulk cement also comes in by rail.

Material handling at the unloading point is hampered somewhat by lack of space. There is no storage area for cement on the



LONG CONVEYOR—Three 30-in. belt conveyors in series move aggregate from stock piles at river level to batch plant on hillside. Total length of conveyor system is 820 ft.

CONCRETE KNOW-HOW AT ELK DAM... continued

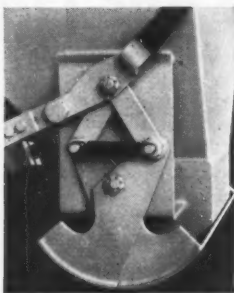
lower level. Cement comes right off the cars into a 150-bbl unloading silo that transfers it to trucks. The trucks haul it up the hill to the plant where the cement storage capacity is 4,800 bbl.

The silo at the tracks has a negligible value for storage. Its main function is to effect a smooth transfer of cement between railway cars and trucks. This lack of storage capacity makes it important that deliveries be dependable. On the average, three carloads of cement arrive every day. The bins at the plant can carry only a few days supply, so a breakdown in rail deliveries could stop the whole job. But so far there have been no such complications.

A storage area is necessary for the 50-65 cars of aggregate that arrive each day. There are four sizes of stone, ranging from $\frac{3}{4}$ in. to 6 in., plus sand. Under-track unloaders move the aggregate from the rail cars to overhead conveyors for stockpiling nearby on the river bank.

continued on page 126

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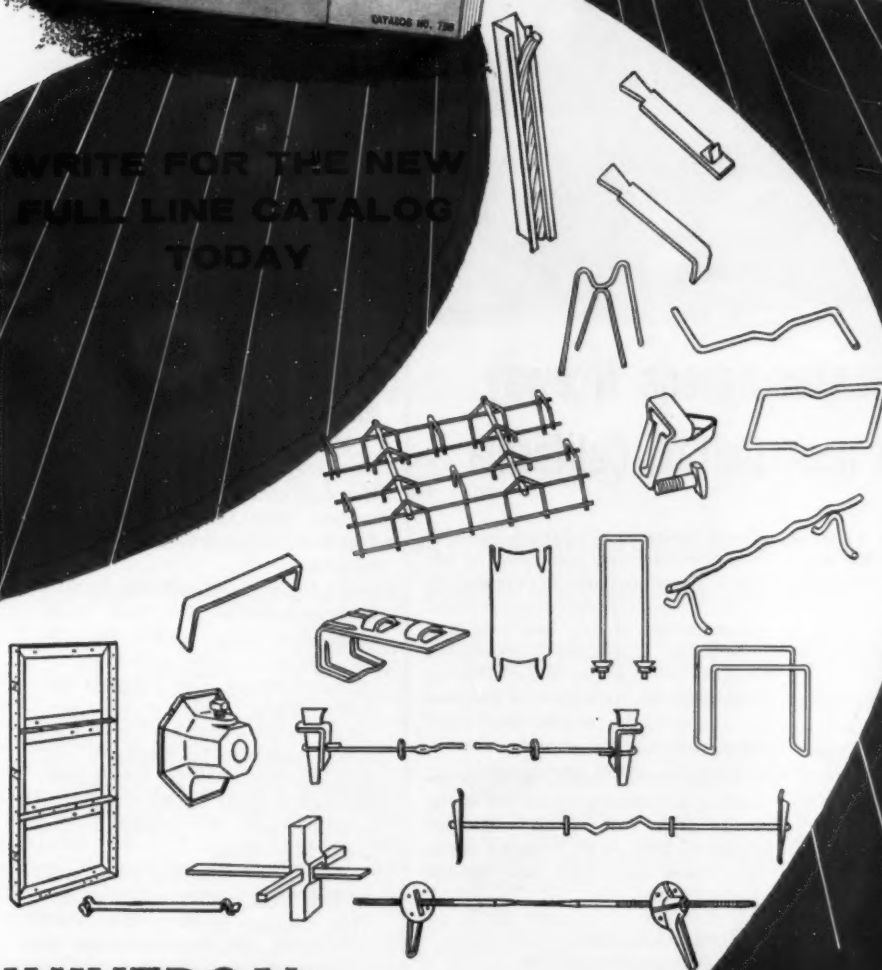
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CABLEWAY DETAILS—Head tower on cliff (left) moves on a 600-ft track. Down the hill a rail line (above) carries the buckets from batch plant to spot where cableway picks them up.



LIMA Roadpacker speeds freeway construction near Colfax, California

Proper consolidation plays a large part in the speed with which McCammon-Wunderlich Co. and Wunderlich Contracting Co., Palo Alto, California, are completing their \$3,650,000 state freeway contract on U.S. 40 east of Colfax.

These prominent contractors have been using the Lima Roadpacker, a big favorite for highway and airport construction throughout the country. It has no equal for fast, uniform consolidation by the vibratory method of single course macadam bases, gravel subbases and soil-cement bases.

The Roadpacker is equipped with six

420-lb. hydraulically driven shoes for effective vibrating and tamping action. These oscillate approximately $\frac{1}{4}$ in. at the right frequency for best consolidation of any base material. The force is applied vertically to prevent shoving the material being stabilized. The sole plate is designed for both forward and backward operation.

Working widths, easily varied by unfolding one or both of the end shoes, range from 8 ft., 9 in., with four shoes, to 13 ft., 1 in., with six shoes. The shoes are raised and lowered hydraulically.

*Get all the facts on the Lima Roadpacker—
write today for your copy of the Roadpacker bulletin.*

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CONCRETE KNOW-HOW AT ELK DAM . . . continued

Underneath the stockpiles a second conveyor, moving in an 8-ft-dia tunnel, carries aggregate as it is needed to the long conveyor system running to the plant.

This plant feeder system consists of three 30-in. conveyors in series that lift the aggregate up to the plant several hundred feet above. The lengths of these three conveyors are 173 ft, 238 ft, and 410 ft respectively. The bins at the plant have a storage capacity of 750 cu yd.

Batch Plant

The plant produces 125 yd of concrete per hr. That is about the maximum that the cableway system can handle. Two 4-yd Koehring mixers handle the batches.

A Johnson automatic control system handles the four mixes most frequently called for and can make up new combinations on short notice. The Johnson system weighs and records each batch automatically. It won't allow a batch to be released until it is correct. And it keeps permanent records of the number of batches and the material that went into them.

Pouring of concrete goes on 24 hr per day, winter and summer. This requires heating of concrete in winter and an elaborate refrigeration system for cooling the concrete in the summer.

In the winter a 150-hp coal-fired boiler outside the aggregate bins supplies steam heat to the bins. Portable oil-burning heaters under tarpaulins keep the



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Call your International replacement engine specialist when you first need a new engine and save three ways

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New 300 hp max. output capacity UDT-1091 Turbo-Torque diesel is the largest of 21 dependable, economical repower choices available in the International line. Power range: 16.5 to 300 maximum hp with your choice of fuel.

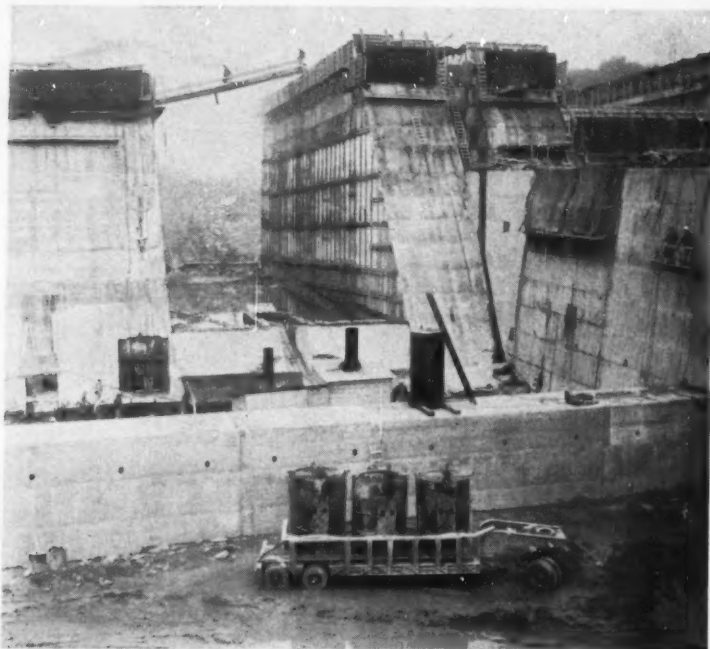
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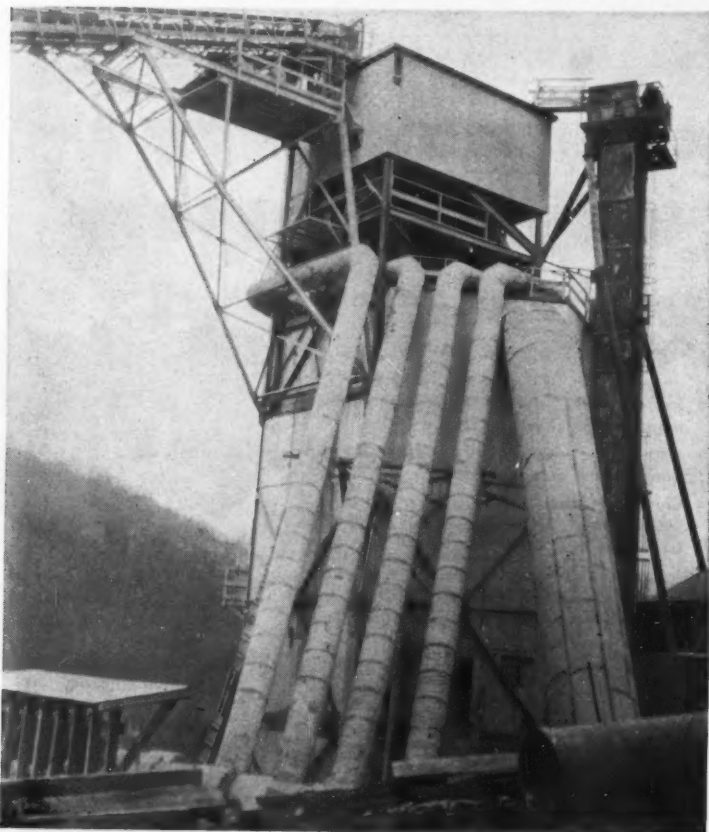


Construction Equipment

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



EXTRA CONCRETE—Cableway cannot reach outside areas of dam to deliver concrete so trailer trucks haul extra buckets down road from plant. Cranes will position buckets.



REFRIGERATION—Pipes connect refrigeration plant, below hill (left), to batch plant. Ice, cool water, and cool air keep concrete below 50 deg during hot-weather pouring.

concrete above 40 deg for the first five days after pouring and above 32° for nine days.

The refrigeration plant, located beside the batch plant, does three jobs. It produces ice that goes directly into the concrete mix at a rate of 80 lb per cu yd of concrete. It also air-cools the aggregate in the bins with air at 27 deg. Finally, it cools the water that goes into the mix.

The cooling system is rated at 753 tph of refrigerant. It keeps the concrete temperature below 50 deg at time of pouring.

A short shuttle rail line carries buckets of concrete from the batch plant along the side of the hill to a position under the cableway. Each full bucket weighs 20 tons and has two compartments that give a combined concrete capacity of 8 cu yd.

Cableway

The cableway spans 1,800 ft with a 3-in. steel cable. The head tower is moveable and runs on a 600-ft track along the face of the hill near the top. The capacity of the system is 25 tons. That is adequate for concrete handling and for moving most of the forms and machinery required at the site.

The cableway delivers an 8-yd bucket to the pouring area every 4 min. With the moveable head tower it can reach almost every point on the dam. But it was not economical to design it to reach the extreme limits of the pour. For these points a truck hauls the buckets down the hill from the plant, and cranes on the ground swing them into position for pouring.

Scheduling

Concrete pouring goes on around the clock. Normally about 2,000 yd go into place in a day. For limited periods the rate has reached 150 yd per hr.

The job started in November, 1956, and will be finished by August, 1959. The whole project will cost \$32 million and will provide flood control and improve water supply for the city of Charleston, W. Va.

The dam is a gravity type 1,178 ft long, 220 ft high, and 220 ft thick at the base.

E. A. Hahn is project engineer for the joint venture. Jay Hay is general superintendent. Major S. R. Fenn is resident engineer for the Corps of Engineers.



◀ Anchored by telescoping hydraulic stabilizers, Case backhoe digs hard, dry clay with ease. Exclusive hydraulic foot-controlled swing leaves operator's hands free to maneuver bucket and dipper-stick while swinging boom. Comfortable backrest seat reverses for operating loader.

▶ Power-steering and shuttle transmission, combined with 42 HP high-torque Case engine and big 13 x 24, 6-ply rear tires, give 1/2-cu. yd. "320" loader extra power and maneuverability to do fast, clean job of backfilling and grading.



Fast Case® wheel and crawler team cuts septic system costs 33%



Murdock used 1-cu. yd. crawler-loader to transport tile from truck to trench... says smooth-starting torque-converter drive, power-shift transmission and wide, deep bucket enable him to carry 120 sections per trip without breakage.

CERTIFIED
OWNER
REPORT

Two versatile Case machines—a 1-cu. yd. TerraTrac® Model 600 crawler-loader, and a Model 320 wheel-type backhoe-loader—have cut installation costs on septic systems by one-third, for contractor Carl D. Murdock, Indianapolis, Ind.

On job pictured, Murdock's crew installed a large septic tank and 300-ft. seepage bed in just 4 hours. The heavy-duty Case backhoe made quick work of digging the 6' x 11' x 10' septic tank hole, and 24" x 36" drain trench. The "600" crawler carried tile from truck, distributed it along trench, and dumped 60 tons of crushed rock into filter bed. Both machines teamed up to complete backfilling and finish-grading.

Faster, easier operation

Murdock likes the extra speed and maneuverability of both Case rigs... says the "320" wheel unit, with its effortless power-steering and no-shift

shuttle transmission, is "at least 30% faster than competitive machines on loader operations." Similarly, the combination of torque-converter drive, power-steering and instant-shift hydraulic transmission practically doubles the amount of work the "600" can do. As Murdock puts it, "I feel it's more important to have power-shifting and power-steering on a tractor than on a pleasure car, because my operators spend 8 to 10 hours a day on a tractor, compared to a much shorter time in a car."

See them in action

Call your nearest Case Industrial Dealer now for a free demonstration of either or both of these revolutionary Case-built wheel and crawler units—or mail handy coupon for free catalog and details of new financing plans, with seasonal "skip-payment" privileges.



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CT



ERECTED WITHOUT special skilled help. Gilbert's crew constructed the complete plant under the supervision of Construction Equipment Company, local Blaw-Knox distributor. Simplified components saved two weeks' time, Gilbert estimates. Plant is rated at 100 yards-per-hour.



$\frac{3}{4}$ " SLUMP concrete is regularly handled by the Hi-boys. Gilbert produces air entrained concrete with low water content. He mixes only 15 gallons of water per yard of low slump concrete. Heavy Mantel steel in the Hi-boy drum and blades withstand the punishment of harsh stone aggregates used exclusively.

"Dollar-for-dollar I got the best value from Blaw-Knox"

"These units were selected after careful survey and analysis. They combined a variety of features to provide the best dollar-value of any equipment we looked at," says J. M. Gilbert, President and General Manager of Concrete Materials, Inc. of Decatur, Alabama.

Concrete Materials, Inc. owns a Blaw-Knox Ready-Mix Operator's package—three 6-yard Hi-boy Truck Mixers and a one-stop Concrete Batch Plant. And, like Ready-Mix Operators everywhere, Concrete Materials, Inc. is in business to stay, with high output, precision-engineered Blaw-Knox Equipment. See your Blaw-Knox distributor for helpful ideas on how the proper equipment leads to bigger profits.

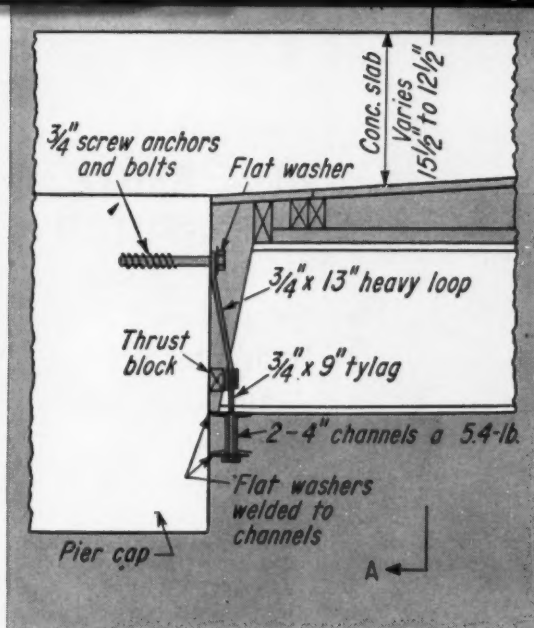


"MANEUVERABILITY is important," Gilbert says, "since we frequently must get through tight areas around buildings, stacks of material and the like. Overall dimensions of the truck and mixer are 18-inches shorter and 3-inches lower because of the Hi-boy design." Since beginning operations early last year maintenance on the equipment has consisted only of routine lubrication.

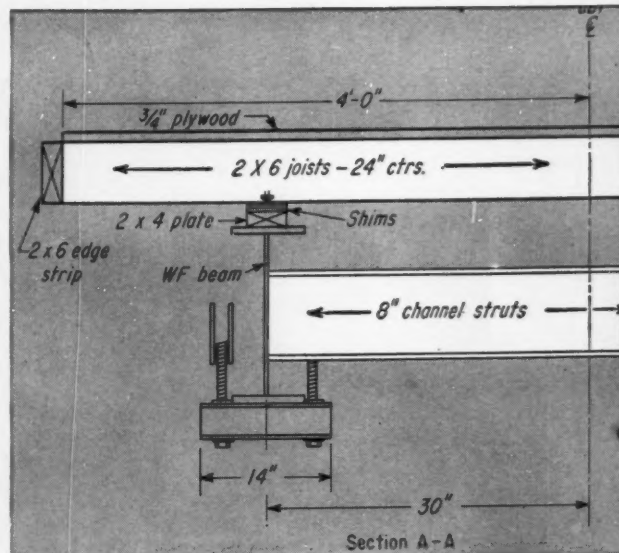


BLAW-KNOX COMPANY

Construction Equipment Division
38 Charleston Avenue, Mattoon, Illinois



DETAIL—Drawing shows how WF beam is suspended from a pier cap or abutment by specially-designed steel hanger assemblies.



CROSS SECTION—Channel struts brace beams anchored to concrete. Beams support 2x6 in. joists that hold plywood forms.

Deck Forms Span Between Piers

By ROBERT N. OLSEN
Rognstad-Olsen Construction Co.
Casper, Wyo.

A DECK FORMING SYSTEM we developed for a recent job spans between piers without intermediate support, eliminating falsework. The forms are built up on frames of WF beams suspended from pier caps and abutments by specially designed hanger assemblies. They have saved us a lot of time and trouble.

A pesky Wyoming Highway Department specification calls for driving piles to support deck forms on slab-span bridges. Only exception is a provision that allows hanging the forms from the permanent structure. With four identical small-span bridges on this job, we had a good chance to take advantage of this exception.

Shop-fabricating an elaborate forming system would be out of the question for a single bridge, but with four reuses the cost was spread out enough to make it worthwhile.

Each of the four bridges on this job has three short spans with a total length of 80 ft back-to-back of abutments. The end spans are

24 ft from center of abutment to center of pier; the center span is 30 ft between centers of piers. A 38-ft roadway plus 1 1/2-ft curbs on each side makes the total width 41 ft.

The deck slab is continuous over all three spans. Slab thickness is 12 1/2 in. over most of the length, but it thickens to 14 1/2 in. at the abutments and to 15 1/2 in. over the pier caps.

Each forming unit consists of a frame of two WF beams connected by three cross-pieces and braced diagonally with 3/8-in. reinforcing bars to prevent racking during handling. The frame supports the timber deck forms on which the concrete is poured.

The beams are spaced at 5 ft and are mill cut to the length of the clear span to be bridged, minus 2 in. for end clearance. The 14WF30 beams in the end spans are 21 ft, 8 in. long. In the center span, the 16WF40 beams are 27 ft, 6 in. long.

A row of short 3/8-in. bolts welded to the top flange on 48-in. centers hold a 2x4 along the length of each beam. The 2x6 joists at 2-ft centers rest on these strips and support the 3/4-in.

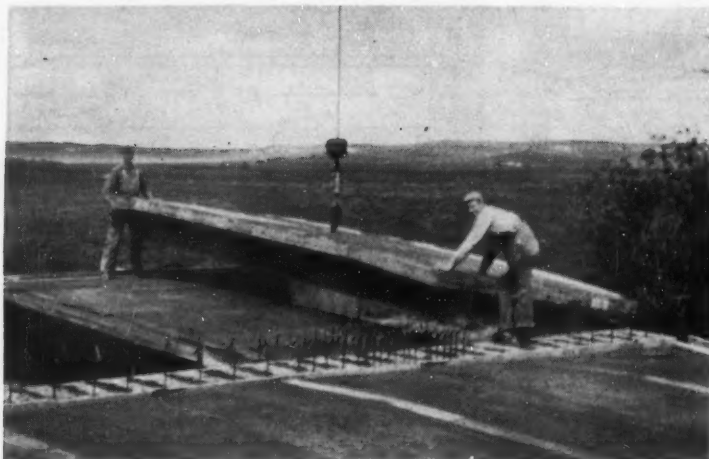


IN PLACE—Form units that span between piers are seated on special hanger assembly.

plywood sheeting for the deck.

The joists are 8 ft long except in the units that go along the sides of the bridge. The joists there extend to 10 ft to provide a walkway. This overhang also gives us room to set and brace the side forms for the deck and curb.

Shim blocks between the joists and the 2x4 strip take care of camber and dead load deflection of the forms. Plans called for a 1/4-in. camber at the center of each span. We added the calculated deflection at each joist support for the forms fully loaded with concrete to get the total thickness of shim required for each point. At the center of the



ERECTION—Workmen guide forming unit as crane lowers it. Lift line attaches to eye bolt screwed into a nut welded to the center cross-piece of the frame.

end spans the total amounted to $\frac{3}{4}$ -in.; at the midpoint of the center span it was 1-1/16-in.

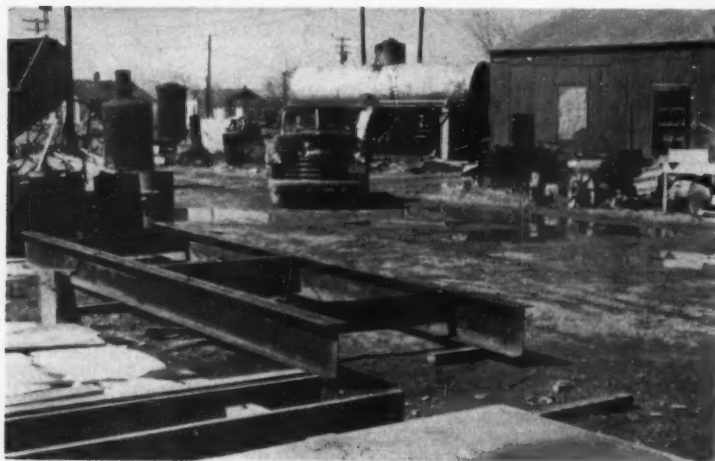
Five units for each span make a total of 15 panels we had to fabricate for the job. The plywood deck sheeting on top of each panel is 8-ft wide, and the units are set at 8½-ft centers. Strips of scrap sheeting cover the gaps between panels. The strips rest on 2x6's nailed along the sides of each panel to the ends of the joists. The 2x6 edge strips leave a clear gap of 2¾ in. between panels. That gives us plenty of room for erection. A 4-in. gap at the ends of each panel is also covered before deck concrete is

poured. These gaps help prevent binding of the panels during stripping.

The thickening of the slab at the abutments and piers is allowed for by a simple modification. The joists in these areas are notched down over the 2x4 strip on top of the WF beams.

We spent a lot of time figuring out a method of hanging the form sections to the pier caps and abutments. We wanted a simple method, but at the same time we wanted some means of adjusting the elevation of the forms. Here's what we finally came up with:

We set screw anchor bolts in the concrete near the top of the



FRAME—Two steel beams connected by three cross-pieces are structural backbone of each forming unit. Contractor built 15 panels. Each was used four times on job.

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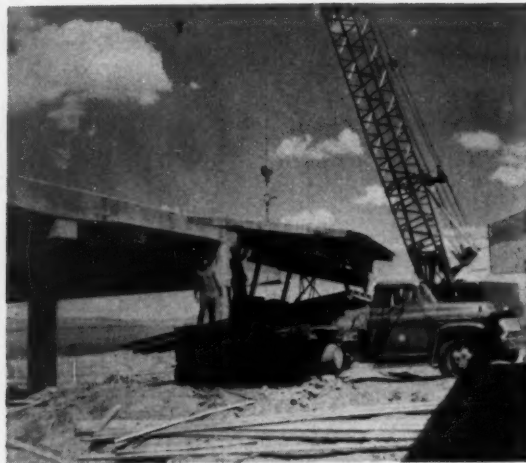
WORTHINGTON



Rack on Dump Truck Strips Forms



UNDER BRIDGE—Rack built on flatbed dump truck cradles the form when bed is raised. Blocking fits rack evenly under the form.



OUT FROM UNDER—Truck pulls unit from beneath bridge after bed is lowered. The form unit is held securely with log chains.

pier and abutment pours; from these we hung $\frac{3}{4}$ -in. Richmond Tyloops that held a pair of back-to-back 4-in. channels. Dock washers welded to the top and bottom flanges of the 14-in.-long channels fastened the channels together. A $\frac{3}{4}$ -in. Tylag bolt inserted through the washer at each end of each channel screwed into the Tyloop and held the channels suspended in position. The bottom flange of each WF beam rested on a channel sling at each end.

Elevation adjustment was a simple matter with this arrangement. The Tylag bolt was turned as necessary to raise or lower the form units. The Tyloops were bent to allow enough clearance for the Tylag bolts to screw into them. A wood block between concrete and Tyloop took the horizontal thrust.

Form Setting

A Lorain Motocrane lifted the 3,000-lb forming units into place. We attached the lift line to an eye bolt at the center of each panel. The eye bolt screwed into a $1\frac{1}{4}$ -in. nut welded to the center cross-piece of the frame. Before pouring concrete, we covered the hole in the deck sheeting through which the eye bolt passed with a piece of sheet metal.

We generally stripped form units five days after pouring the deck. Specs called for 60% of the 28-day design strength of 4,000 psi before stripping. Cylinder

tests indicated that the compressive strength of the concrete was well above the required 2,400 psi after the five-day period.

Form Stripping

To speed stripping of forms, we adapted a flatbed dump truck so that the form units could be lowered from the underside of the deck and pulled out from beneath the bridge.

We built a frame on top of the 17-ft-long bed of the truck, which is equipped with two 7-in. hoists. The frame becomes a level rack that cradles the form units when the bed is raised beneath the section. The rack can be adjusted with wood blocking to fit evenly under each WF beam.

After the bed is raised and the rack is in position, the form section is tied to the truck bed with log chains and load binders. The hangers are then disconnected and the form sections lowered enough so that the truck can pull it out from underneath the bridge. With no piling or falsework obstructing the area, there is plenty of room for the truck to maneuver into position.

Two different racks were built to hold the forms. One with short legs was for the end panels; one with long legs was for the greater height of the center span.

We averaged a completed bridge deck every two weeks with our forming system. Moving the units from one bridge to an-

other went smoothly. A move that covered five miles took four men three days. Moving the forms between two bridges almost side-by-side took four men only two days. In this case we didn't have to transfer the panels from the rack to another truck. They were carried to the next bridge on the rack of the stripping truck.

Economical System

Cost of this system depends on the number of reuses. We figured that a minimum of four reuses would justify the expense of fabricating the units. This analysis would change with span lengths and other factors on different jobs.

Since the bridges were built to standard highway department plans, we expected to get further benefit from them on future jobs. This has already proved to be the case. We have rented the forms to another contractor in the area for a job with several bridges of the same design.

Even without this bonus, however, we are well satisfied with the dividends of speed and economy that our forming system made possible.

Project engineer for the Wyoming Highway Department that owns the bridge was Robert B. Newman. Our job superintendent on the job was George South. The author designed the forms and served as general job superintendent.

NEW!

Whiteman WALK-OR-RIDE POWER BUGGY®



ALSO FLAT-BED MODEL

Compact, lightweight, extremely maneuverable, the new Whiteman "Walk-or-Ride" Power Buggy® is the perfect answer to placing concrete under many conditions. Travels over lighter, narrow runways, onto elevators, through 31" doors. Turns on a dime, has forward and reverse drive. Pours easily, neatly, accurately with perfected positive-control dumping mechanism.

Operator can either walk behind or ride on fold-down platform. Regulations do not require skilled labor to operate. All the time-tested stamina and rugged performance of the famous Whiteman DB-60 Power Buggy® have been built into this sturdy new Walk-or-Ride model. Ask your Whiteman dealer for full details or write for catalog today.

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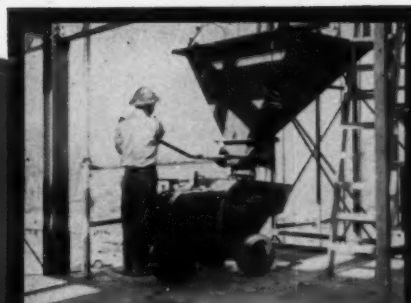
VIBRATORS



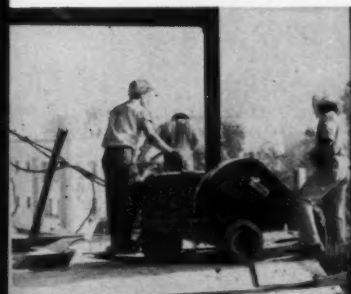
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"Walk-or-Ride" Power Buggy loads from hopper on upper floor.



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They bolted the face of this diversion tunnel



General contractor for diversion tunnel phase of Hills Creek Dam was The Shea Company, under supervision of U. S. Army Corps of Engineers, Portland district.



Here you see Bethlehem Rock Bolts which control rock at the face of a 1150-ft diversion tunnel for the Hills Creek Dam project, on the Middle Fork Willamette River, in northern Oregon.

The slotted bolts, 1 in. in diameter and up to 6 ft long, were installed in drilled holes of 1 1/4 in. diameter. When the bolts were driven, a steel wedge, previously inserted in the slotted portion of each bolt, spread the bolt ends to provide firm anchorage. Square anchor plates were used for additional support. The same bolting method was also used in the roof of the tunnel.

In addition to the slotted bolt, Bethlehem also makes a headed bolt for rock control. It has a diameter of 3/4 in., and is used with a leaf-type expansion shell.

If you have a rock control problem, we'll gladly work with you in solving it. Just say the word, and we'll have a representative examine the site, and make recommendations. Our nearest sales office is at your service.

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Photo courtesy of H. E. Lauterbach Lumber Company

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The Carrier pictured above is a typical example. The owners report that it out hauls three trucks. In all, company records show that dollar

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This company's success is more *average* than unusual. We have a number of case histories to prove it. If you would like a personal file of some of these field reports, simply write: Carrier Case Studies, Clark Equipment Company, Battle Creek, Michigan. Please state any industry preference.

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C.I.M. FLOODLAMPS are ALL-GLASS, give longer service life, more light, and don't grow dim!



General Electric's new floodlamp for Construction and Industrial Machinery is *all-glass*. This one-piece unit has no gaskets to leak. It is hermetically sealed so that dust, dirt and moisture can't get inside to scatter or dim light. Reflectors and lenses are a special hard glass that won't crack if splattered by rain or snow. There is no inner bulb to blacken—the whole unit is a bulb! Result: G-E C.I.M. Floodlamps *do not* grow dim.

Available in the 12- and 24-volt sizes, these lamps feature *two* single coil filaments *in series* instead of one long filament—and being shorter, the filaments are much stronger. These sturdy filaments are not welded to the lead-in wires . . . instead, they are clamped in a vise-like grip for added resistance to breakage. So filaments *stay* in focus.

What does this mean for you? It offers rugged-duty floodlamps that, when used in shock-mounted housings, will give a broad-beam spread, both vertically and horizontally, through any weather, for use on bulldozers, graders, scrapers, crawlers, or other road-building, mining and construction machinery.

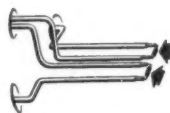
General Electric makes a full line of all-glass sealed beam lamps for Construction and Industrial Machinery. Contact your nearby G-E Lamp Distributor or write: General Electric Co., Miniature Lamp Dept. CEM-58, Nela Park, Cleveland 12, Ohio.

SPECIFICATIONS FOR G-E C.I.M. FLOODLAMPS

(PAR-46 Bulbs—2 contact lugs—5 $\frac{3}{4}$ " dia.—500 hours designed life)

G-E No.	Circuit Volts	Watts
4478	12	60
4578	24	60

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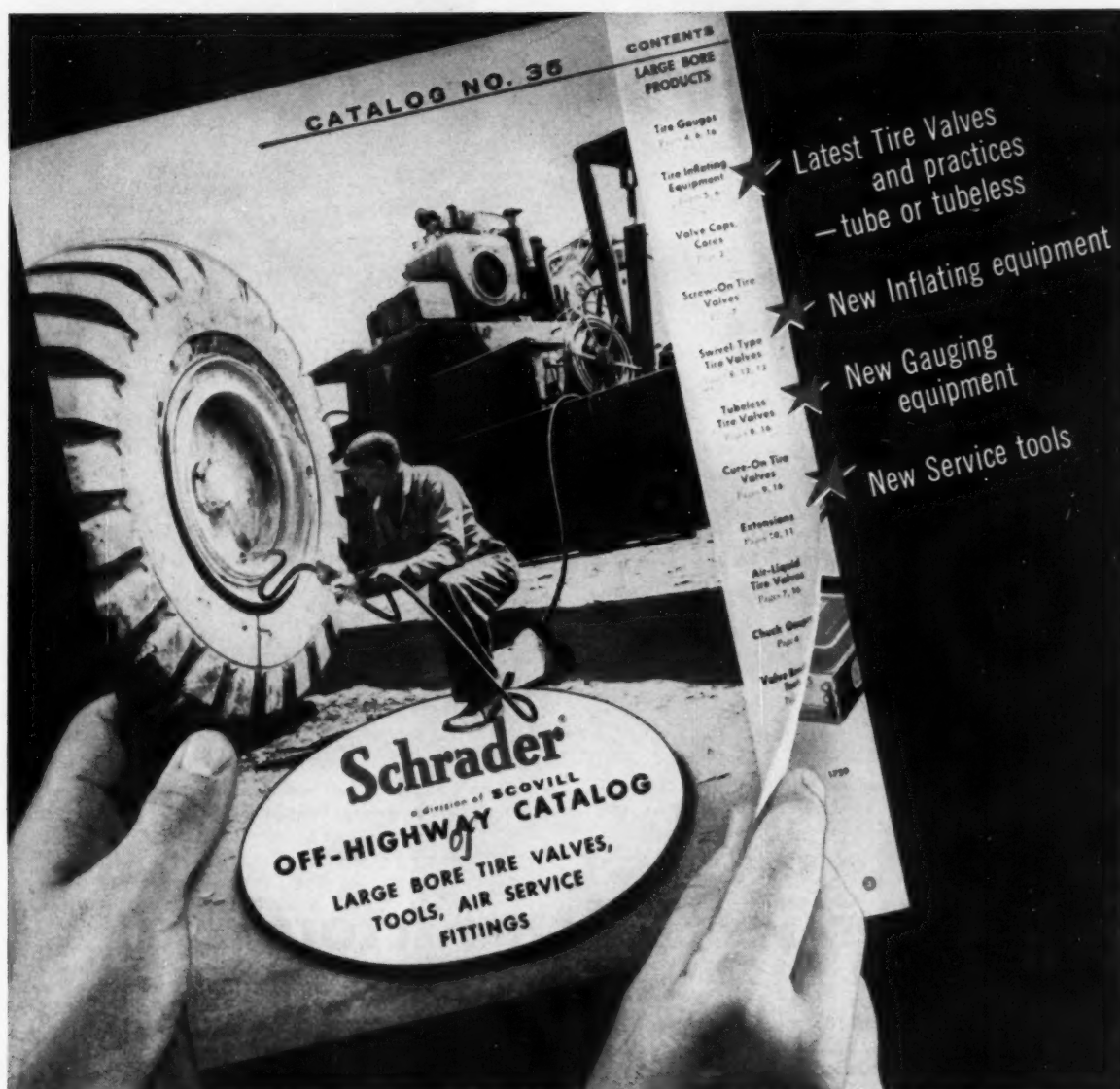
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ON SCHEDULE—Bridge over the Fox River near Elgin, Ill., races towards early spring completion thanks to Arcole Mid-

west Corp.'s ability to form and pour concrete piers and caps throughout winter despite below freezing winter temperatures.

Winter Tests Contractors' Skill

IF TWO-THIRDS of the 187-mi Northern Illinois Toll Highway opens by July as scheduled, it will be because of the skill with which contractors met the tests of an unusually cold and severe winter.

Temperatures dropped at times to 10 deg below zero, but contractors worked through the coldest weather forming, concreting, and paving the 265 bridge structures on the \$245-million project. A variety of weather safeguards not only helped meet the severest weather conditions but actually made it possible to push work ahead of schedule.

The Northern Illinois Toll Highway is a three-legged road. Longest leg is the 89-mi North Illinois Tollway connecting the outskirts of Chicago to Rockford. Next in size is the 74-mi Tri-State Tollway that runs parallel to Lake Michigan from the Wisconsin state line to near the Indiana line. Finally, the 24-mi

East-West Tollway connects West Aurora with the southerly section of the Tri-State Tollway.

Most bridge foundations are either cast-in-place concrete piles or precast open-end concrete piles. All caps are poured concrete; stringers for most of the bridges are precast, prestressed concrete beams, but a few bridges have steel stringers. All bridges are decked with poured-in-place concrete.

Weather safeguards included insulating forms, concrete admixtures, and clever enclosures. L. B. Strandberg & Son of Chicago, holder of a \$15-million contract for bridges making up a major interchange, had a typical operation. The job included 34 concrete piers capped with poured concrete. Precast, prestressed concrete stringers went over caps on most of the bridges. Several called for structural steel stringers.

Superintendent Fred Brough

prefabricated whole form sections complete with a basket of reinforcing for each pier. He tacked 2-in. Balsam-Wool insulation to the outside of the forms. This insulation kept concrete at a constant 70-deg temperature during pours when the thermometer dropped as low as 10 deg below zero.

Cap form construction got the same treatment. The only additive to concrete was Darex. Strandberg, fortunately, is pouring all his concrete decks in spring weather.

Hoyle-Newberg, a joint venture of Hoyle Construction Co., and the Gust K. Newberg Co., worked through the winter on foundations for 19 bridges. These consisted of poured-in-place piers and caps.

Though Superintendent John Gagl insulated form exteriors with Balsam-Wool, he limited pours to days when the temperature was at least 20 deg.

"We could have poured at lower temperatures," Gagl says. "The insulation kept the concrete warm, but it was too cold to get much work out of the men, so we closed down."

Ryan Construction Co. completed earthmoving operations on its section last fall and spent the winter building piers and paving decks for four bridges. Ryan's piers and stringers all are prestressed concrete that required not protection during placing. But D. C. Dunham, project manager, enclosed each bridge to pour deck concrete.

The enclosure consisted of a trussed timber framework 45 ft wide and 230 ft long built of 2x6's. Framework was supported from the ground on timber posts. Dunham tacked lightweight 6x6-ft panels of 1x2-in. wood, covered with Sisalkraft paper, to the framework to complete the enclosure.

Four Nelson oil-burning heaters under the deck maintained a constant 50-deg temperature within the enclosure day and night.

Dunham used the same enclosure for all four bridges. The moves were easy. A crew simply stripped off the panels, disassembled the framework, then rebuilt the enclosure around the next bridge.

Arcole Midwest Corp., building a bridge over the Fox River near Elgin, insulated its pier forms with 2-in. of Fiberglas. They also added calcium chloride to the concrete mix. To pour concrete decks, Superintendent Del Withie closed in deck sections with canvas and set gas-burning salamanders underneath. The contractor covered the poured deck with Sisalcraft paper topped with a layer of straw held down with heavy canvas.

Other contractors along the road came up with some novel enclosures. One put up an old circus tent to protect the upper portion of a bridge and draped polyethylene film around the lower part.

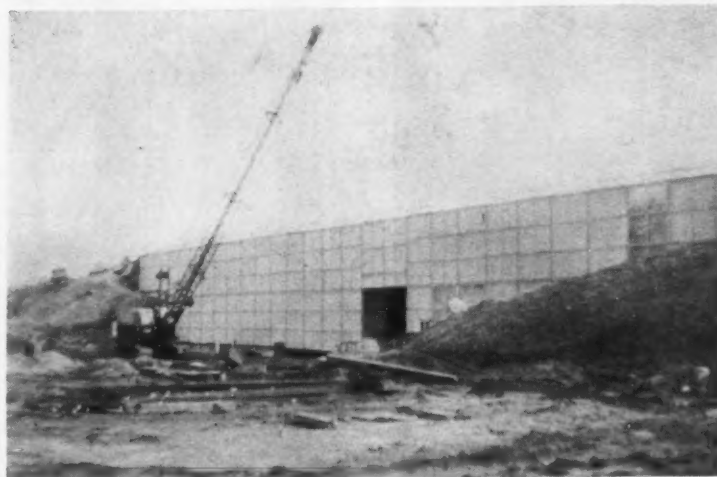
Many contractors fought severe cold to pour concrete in a rush to meet schedules, but some were not hampered by sub-zero temperatures. Their contracts called for foundations of prestressed concrete cylinder piles. Joseph K. Knoerle & Associates, Inc., the consulting engineers, designed 53,600 ft of these piles to serve



INSULATED FORMS—Hedges Construction Co. insulates bridge pier forms to keep concrete warm during winter pours. Workmen brace forms with Acme Steel Strapping.

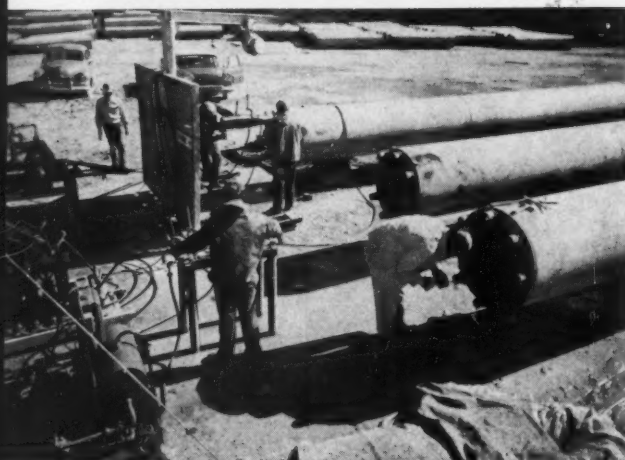


CIRCUS TENT—With the help of smokeless heating units a circus tent provides protection during winter paving of Rosecrans Road Bridge on Tri-State Tollway near Waukegan.



POLYETHYLENE—Ryan Construction Co. builds timber framework around a bridge and encloses structure with polyethylene panels to keep temperatures high during deck pours.

ILLINOIS TOLL HIGHWAY...continued



POST-TENSIONING PILES—Piles first are cast in sections then assembled to full pile length and post-tensioned to 150,000 psi.

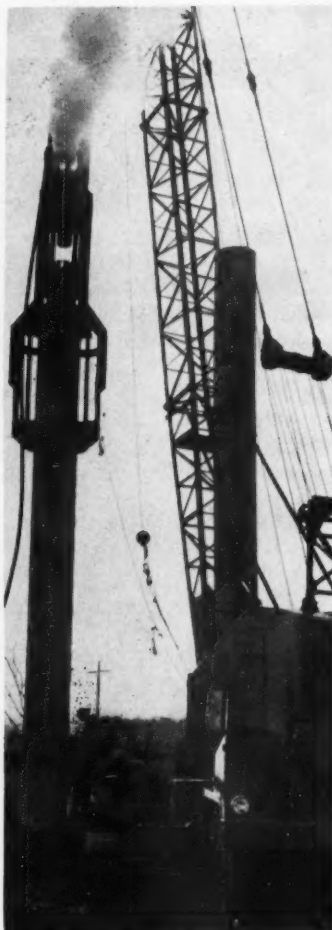


BORING PILE HOLE—Caisson Corp. bores pile hole to within 6 or 7 ft of bearing material with truck-mounted boring machine.

Precast Piles Support Bridge Structures



PLACING PILE—Workmen guide precast, prestressed concrete pile into pile hole.



DRIVING PILE—Koehring crane drives pile with 3-0 Raymond-Vulcan hammer.

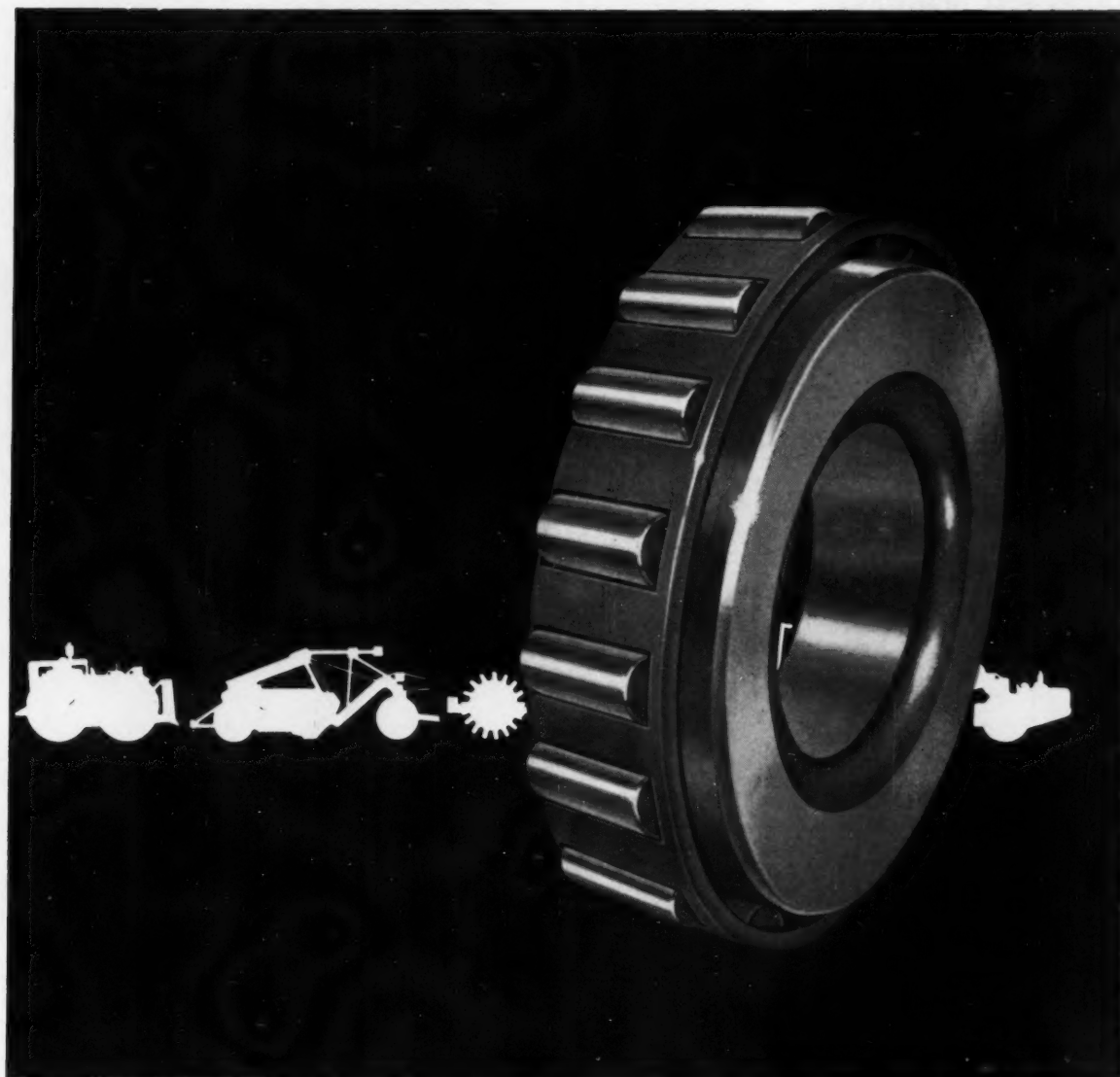
as foundations for 93 bridges. Raymond Concrete Piles Co. fabricated and installed the piles for most contractors. They set up a prestressing plant in a pipe manufacturing yard south of Beloit, Wis., and cast the piles in 16-ft sections.

Eight post-tensioning ducts were spaced equally through the length of each 36-in. OD section. Piles were post-tensioned by pulling twelve 0.0192-in.-dia wires in each tensioning duct to 150,000 psi.

Placing the piles presented no serious problems. Lane-Weber Co. of Aurora bored 36-in.-dia holes through overburden to within 6 or 7 ft of bearing material with a hydraulic drill; on many other jobs Calweld and Williams earth-boring machines, operated by Caisson Corp. of Skokie, bored the holes.

Cranes lifted the piles into the holes, and other cranes, mounting 3-0 Raymond-Vulcan hammers fitted with special driving heads designed for the large diameter piles, drove them to 150-ton bearing. Piles were left hollow, but the top 3 ft of each was plugged with concrete.

Precasting and prestressing 60- to 80-ft-long concrete stringers went on through the winter without special protection other than placing of double tarpaulins over casting beds during steam cur-



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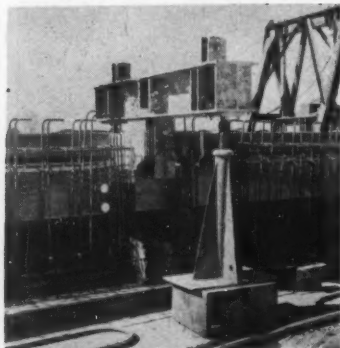
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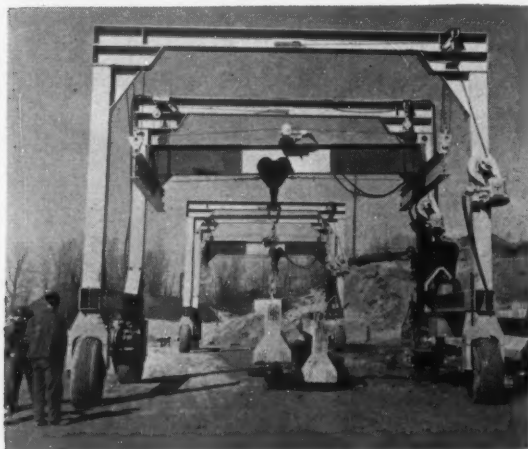
New Rigs Work In Casting Yard



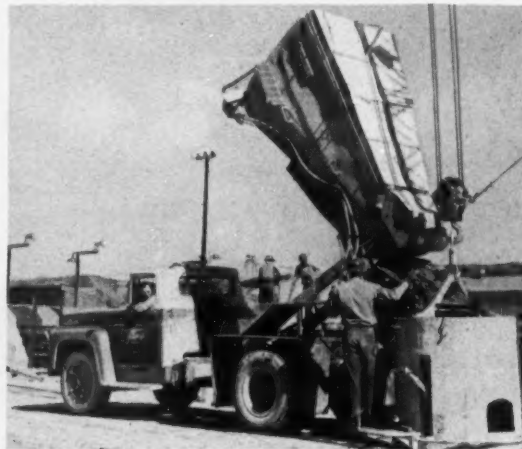
HOLDING WIRES—Cross beam on screw jacks holds wires at beam ends.



LIFTING WIRES—Hydraulic jacks fitted to A-frames lift tensioned wires at designated beam ends and permit casting of six or more members on a single 600-ft casting bed.



MOVING GIRDERS—Travelifts move beams and stringers about yard at 5-mph rate. Rigs were designed to move boats.



PLACING CONCRETE—Truck-mounted Agitor 3½-yd bucket-body carries ready-mix concrete from batch plant to casting site.

ing. Still, the casting operation was a thing of beauty, loaded with tricks useful to contractors.

More than 4,000 girders are being furnished under contracts with three fabricators: Material Service Corp., American-Marietta Co., and Union Chemical and Materials Corp. Midwest Prestressed Concrete Co. holds a subcontract for some of the work.

Material Service Corp. has a plant in Algonquin with 600-ft casting beds. Workmen set wire strands the 600-ft length of a bed and stress them to the designed load. At each designated beam end two Rodgers hydraulic jacks on a frame that straddles the bed position the wires. A screw jack frame slipped under the wires holds them positioned while the

hydraulic jack frame is moved to a different location. Slotted steel templates keep wires properly spaced and anchored.

A crane lifts Form-Crete steel forms to each side of the bed where they are bolted to the concrete bed and to one another with an electric impact wrench. Truck-mounted 3-yd Agitor buckets carry 7,400-psi concrete from a batch plant at the site to a crane that dumps the concrete into forms with a 1-yd bucket.

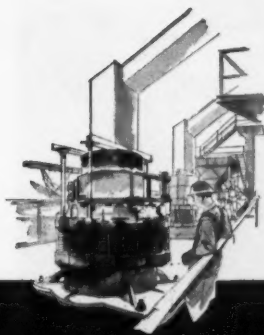
After concrete is vibrated, two tarps are placed over the beds, and the girders are steam cured. Later, girders are stripped of forms and lifted from their beds by a pair of cranes working together. Girders either are stock-piled or lifted directly onto

trucks for hauling to work areas.

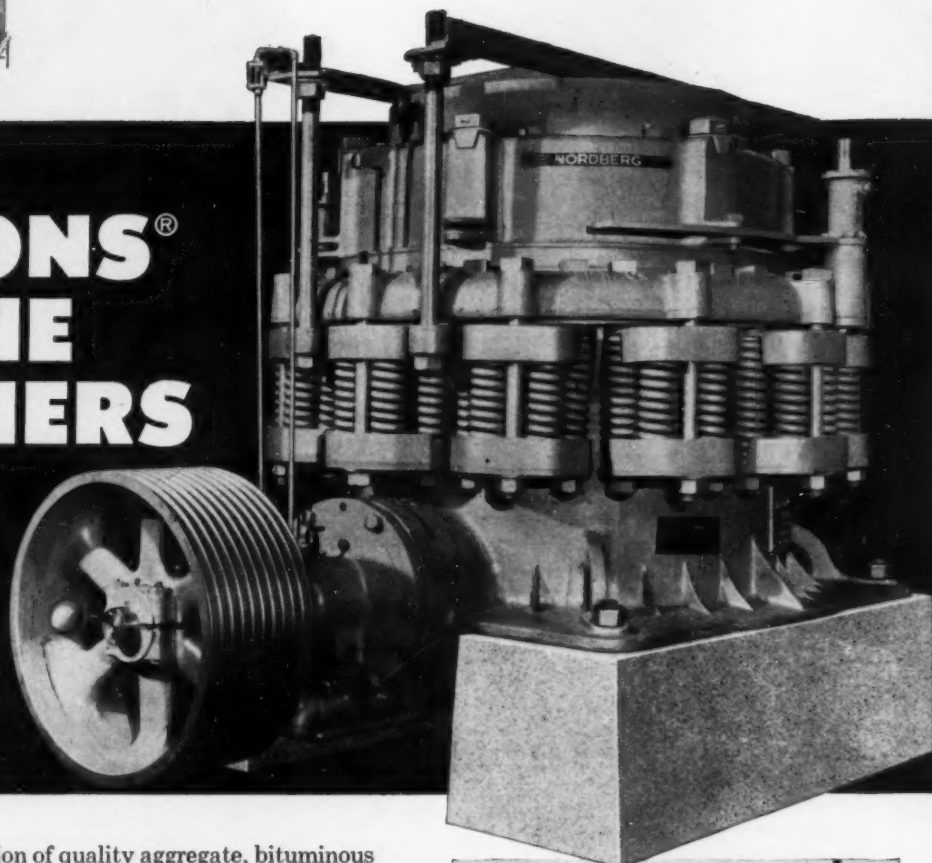
This operation recently was improved on when MSC brought in two new rigs to handle girders. They are boat-hauling, self-propelled dollies called Travelifts. They move over a beam, hook onto it, lift it from its bed, and haul it about at a 5 mph clip. Made by Travelift and Engineering, Inc. of Sturgeon Bay, Wis., Travelifts primarily were designed to handle and launch boats in and around boat yards. But the rigs prove highly suitable to casting operations where they can carry hopper loads of concrete, and help stress wires, as well as haul completed girders about.

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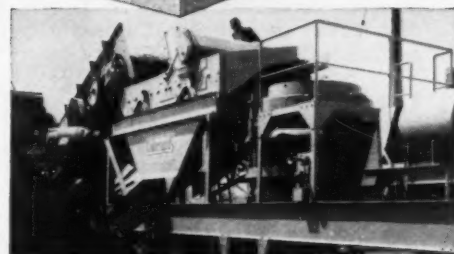
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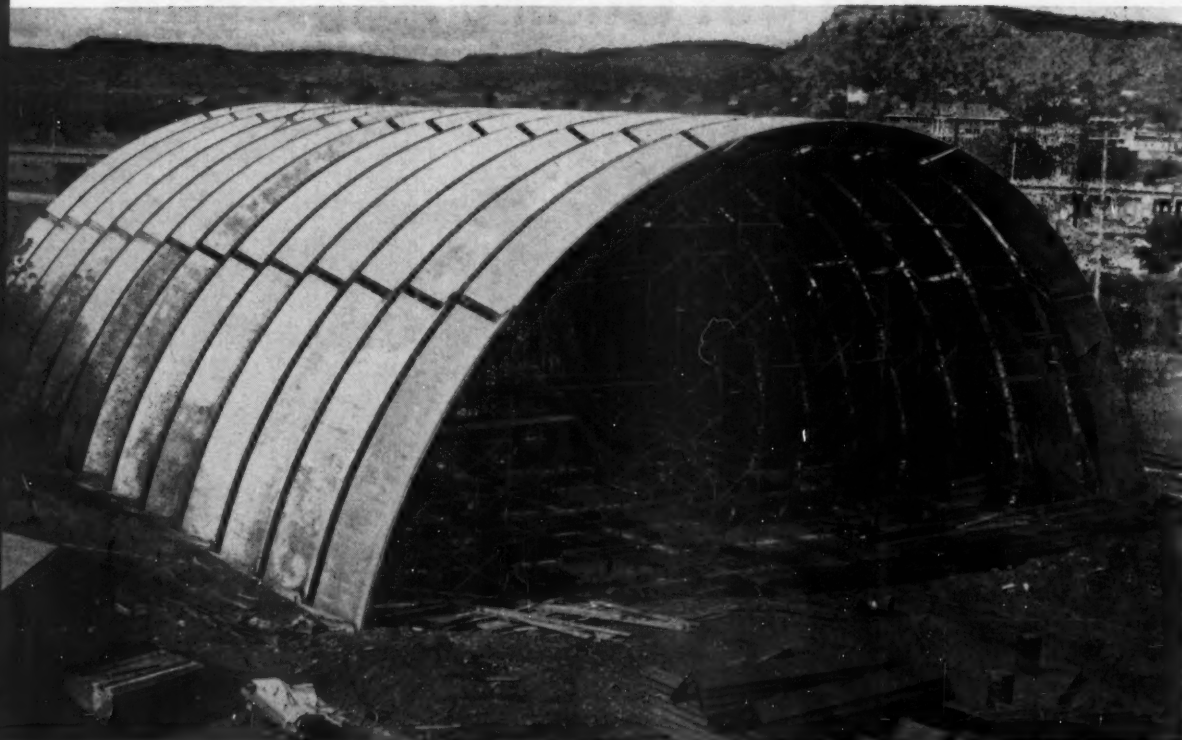
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CONCRETE ARCH—Thirteen rows of thin, V-shaped arch ribs span 115 ft across width of gymnasium building. Casting of the 65 sections took 15 weeks; erection, six weeks.

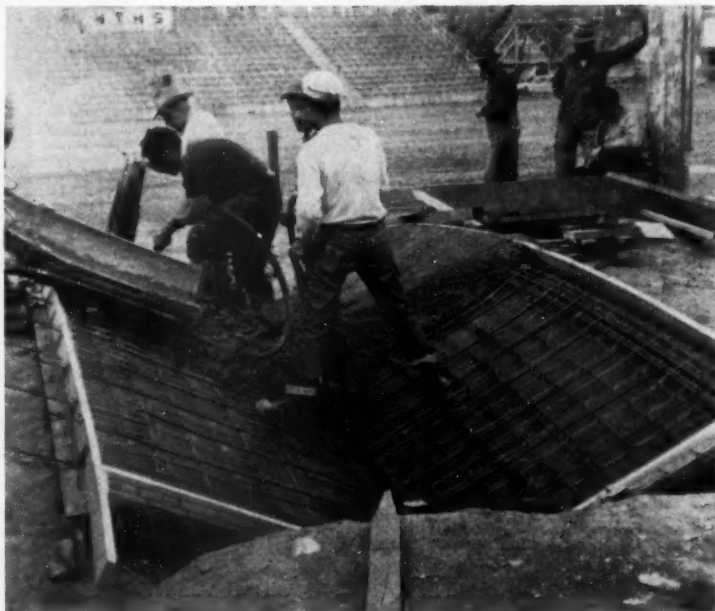
Precast Arch Sections Form

PRECAST FOLDED - PLATES form a corrugated barrel shell that makes an economical gymnasium building for Holy Trinity High School of Trinidad, Colo. Five V-shaped sections in each of the 13 rows of arch ribs span 115 ft across the width of the barrel. Length of the building is 123 ft; peak of the arch is 44 ft above the gymnasium floor.

Contractor Platt-Rogers of Colorado Springs cast the 65 sections on five casting beds at the site, erected them on steel scaffolding in one continuous operation, and then welded and grouted all joints to tie the structure together.

The 30-ft-long sections are all identical. Width is 10 ft, 3 in.; depth from ridges along each side to valley in the center is 2 ft, 9 in. Thickness of the folded-plate sections is a uniform $3\frac{1}{4}$ in.

Job superintendent Don Anderson took advantage of the natural contour of a gently sloping hill at the site in laying out the five cast-



POURING—Workmen distribute concrete from ready-mix trucks over maze of reinforcing in casting bed. Steel frame around 4-in.-thick base slab supports wood side forms.



CASTING BEDS—Curvature of precast folded plate sections corresponds so closely to natural slope of hill at job site that little digging is required to shape the beds.

Thin-Shell Roof



FINISHING—A job-built steel screed levels concrete to the V-shape of the section. Pulled by a rope, the screed travels on rollers along the edge of the forms.

ing beds. Curvature of the slope conformed so closely to that of the folded-plate sections that very little digging was necessary to shape the beds. A 4-in.-thick concrete slab poured directly on the ground provided a base for casting the sections. A steel frame around the perimeter of the base slab supported the wood side forms for the precast sections.

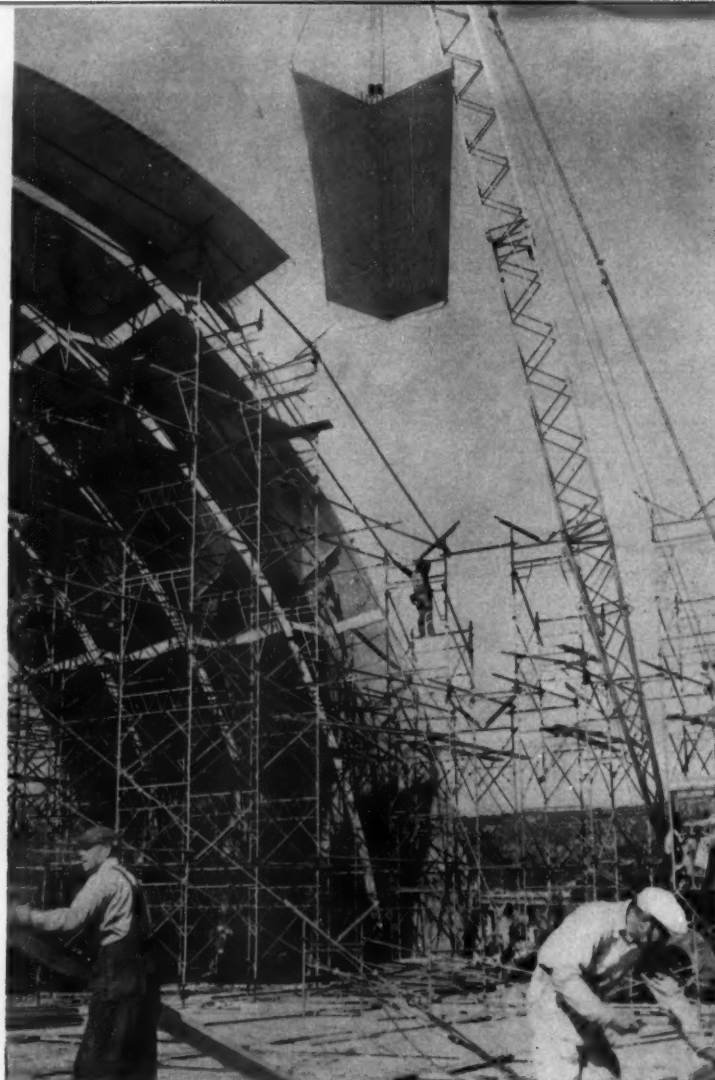
Reinforcing consisted of welded wire fabric covering the entire section in two layers, and reinforcing steel running along each edge and in the bottom of the V. Bars also bend around the bottom of the V, and a staggered row of transverse bars extends from top and bottom of each long side of the sections. The bottom row protrudes far enough to reach the centerline of the joint so that they can be welded together to help tie adjoining rows of sections together.

When reinforcing was set, crews placed the concrete into the casting beds from ready-mix trucks. A silicone water seal was sprayed on the base slab before each pour to act as a bond-breaker. A job-built steel screed shaped to the V of the section traveled on rollers on the edge of the form

Crane Erects Sections On Scaffolding



PICK-UP—Legs of pick-up sling hook on ends of strongback beam bolted to section.



INTO PLACE—Crane lifts folded-plate sections onto cradles bolted to uprights of steel scaffolding. Sling adjustment keeps sections suspended at correct in-place angle.

and leveled the concrete. Workmen pulled it along by a rope attached to the bottom of the V. Then finishers touched up with wooden floats.

The contractor sprayed the precast sections with water and covered them with Sisalkraft paper after pouring and finishing the concrete. Stripping of the precast sections ordinarily followed seven days later. Design strength of the concrete at 28 days was 3,000 psi. Several cylinder tests showed actual strength well over 4,000 psi.

Casting of all 65 sections took 15 weeks. After curing, the sections were stored on a nearby football field until casting was completed and all sections ready for erection. In this way Platt-

Rogers minimized the rental period for the steel scaffolding.

Erection began when the Safway scaffolding system was only partially complete. Eventually the scaffolding covered the entire floor area. No attempt was made to use a traveler or other movable system because the contractor planned to place all the sections before they started forming and grouting the joints.

A Lorain Motocrane lifted the precast sections into place on the scaffolding. A strongback beam was bolted to four inserts cast in the concrete. A lifting sling was attached to the ends of the strongback beam and adjusted to keep the section in the correct in-place angle while suspended. Cradles bolted to the uprights of the scaf-

folding supported each section near the ends.

Erection in each of the 13 rows started with the top section and proceeded downward evenly on each side. Guys braced the scaffolding under the first row but this wasn't necessary for subsequent rows when the length of the scaffolding system was great enough to provide longitudinal stability.

The arch ribs spring from concrete footings. The bottom sections in each arch rib rest on top of the footing, which is sloped perpendicular to the arch. Tie bars in the floor slab cross the width of the building to take the horizontal thrust of the arch.

Erection of scaffolding and pre-

continued on page 150



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JOINTS—Welder connects reinforcing steel that protrudes from edges of each section and laces across the joints. Grouting joints with Gunite equipment took three weeks.

PRECAST THIN-SHELL ROOF . . . continued

sections took about six weeks altogether.

With all sections in place on the scaffolding, the contractor began grouting the joints. Reinforcing consisting of three $\frac{3}{4}$ -in. bars was placed along the joint between each row of arch ribs. These bars were held in place by spot welding them to the dowels protruding from the sides of the precast sections.

Platt-Rogers grouted the joints with Gunite equipment. The mix was 1-to-4 cement and sand. Wood planking, 1x14-in. in size, placed underneath the gap between sections served as the forms. Bracing and shoring resting on the scaffolding supported the joint forms. The forming of the joints took two weeks; the grouting, three weeks. The exterior of the concrete was sprayed with a plastic waterproof coating when the joints were completed.

Economical Design

Architects Toll & Milan of Denver based the design of the building on several considerations. Most important from the owner's viewpoint was the economy of combining the precast fabrication with the lightweight shell design. Poor soil bearing conditions at the site dictated a lightweight structure. The thin precast sections amply satisfy this requirement. Reinforcing steel totaled only 20 tons or 2.7 lb per sq ft.

A secondary consideration, according to Henry C. Toll of Toll & Milan, was that the enclosed space be large enough so that the gymnasium wouldn't heat up excessively when filled with people. The gym will accommodate about 1,200 persons. "And since the structure is close to another school building, we didn't want any high walls dwarfing that building or obstructing light from the classrooms," Toll said.

Five steel columns brace the ends of the barrel. Piano wires suspended from the grouted joints hold a Unistrut grid that hangs 24 ft above the gymnasium floor. The Unistrut is a U-shaped channel open at the top. It provides easy access to wiring and lighting fixtures.

The general contract held by Platt-Rogers Construction Co. of Colorado Springs amounted to \$175,000. The structural engineer was Henry J. Boland of Denver.

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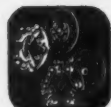
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Roadbuilder

BEATING the completion date by six months is the objective of Codell Construction Co. on their Wellsville, O., highway job. At the rate they are going now they'll do it.

Codell, whose headquarters is Winchester, Ky., has a \$4.3-million contract to replace a section of Route 7 along the Ohio River with 1.8 mi of four-lane highway. They have until June, 1959, to finish, but they hope to be on their way home before Christmas of this year.

Good equipment management is a big reason why the job is going so well. Codell knows how to pick the right equipment for a job and how to get the best production from the machines.

On this job they are going in for big machines—like Cat D9's and 4-yd shovels. They figure that on a big job, a big machine gives the lowest unit costs for earth-moving. They have three shovels with a combined capacity of 9½



BUSY MACHINES—Shovel loads blasted rock into trucks. Just beyond, drilling rig prepares another shot. Bypass road leads to similar operations farther along road.

Big machines and a contractor who knows how to handle them are the main reasons why this road relocation job is running six months ahead of schedule.



DRILLING—Truck-mounted Davey rotary rig drills 6-in. blasting holes. Drill crews work well ahead of shovels to keep several excavation areas open at the same time.

Shoots for Early Completion

yd moving 10,000 yd of earth and rock per day. This added up to more than 1,000,000 yd in the first six months to put Codell way ahead of schedule.

Of course a contractor can lose his shirt with big machines unless he can keep them busy. Codell has solved this by smart scheduling and a good layout of access and connecting roads.

The site presents some problems. It is part way up a mountainside above the existing road and a railroad. In spite of cautious blasting, Codell occasionally showers both road and railway with rock. But they are careful to stop traffic and clear the area under the cliff before each blast so this problem has caused little trouble.

The terrain is such that Codell can get at the 1.8 mi section from one end only. That complicates the access and material hauling job. There is no room for disposal on the mountain face so the

trucks have to haul rock around to a nearby valley.

Total excavation is just over 2,000,000 cu yd, of which 500,000 yd is earth and the rest solid rock. The deepest cut is a side-hill cut of 96 ft.

Keeping Machines Busy

The limited access determined Codell's basic strategy. Starting last fall, the first stretch they came to was a series of small cuts and deep gulleys to be filled. They decided that this section would be easier to work in the summer when earth is easy to handle so they crossed over with temporary roads and attacked the big rock cuts beyond.

They had to haul the rock from these cuts back to the entrance end of the job, and the length of haul increased as they went forward. They did most of this long-distance rock hauling by truck during the winter when the roads were hard, leaving the shorter

hauls for scrapers this summer.

They arranged to dump excess rock in a low area over the hill from the line of the road. The huge quantities of rock they dumped there literally buried part of the forest and formed a new little mountain in this valley.

Instead of working forward on a single front, Codell tries to keep four or five excavation sites open at the same time. They drill and blast at one point. Then the drilling crews jump ahead to another point while the shovels and trucks remove the loosened rock. With this system, if any phase of the job gets ahead of the others, the men and machines have an alternative area to move to. Or if a crew gets behind, it does not slow the others.

A typical set-up might have the 4-yd Bucyrus-Erie 88-B shovel loading a fleet of 22-ton Euclid end dumps at one point in the road. Ahead of it the drilling and blasting crew sets up another shot. Still farther ahead, a 3½-yd Lima 1201 and a 2-yd Lorain work side by side to clean up blasted rock.

Bypass roads prevent the trucks from one area interfering with those of another so the operations are independent of one another. But they are so close together that crews can shift around quickly when necessary.

Near the closed end of the job, the haul distance increased to

Codell has 4 mi of temporary roads, criss-crossing the area in all directions. At first glance the pattern looks too complex for a straight 1.8 mi highway job, but each road has a purpose. The payoff comes when 16 Euc trucks, plus an assortment of other vehicles, roar back and forth in the limited area without interfering with one another.

Codell went to some trouble to keep the grades on these winding roads low. With no grade over 9%, and most of them much less, the Eucs travel fast and don't waste time chugging up steep hills. This means many extra loads in a day.



EXCAVATION—Two shovels with combined capacity of 5½ yd load two trucks as third truck backs in. Smart scheduling increases production by keeping machines busy.



PREPARING EXPLOSIVE—Crews activate ammonium nitrate by adding fuel oil. They leave bag until oil saturates the prills.



LOWERING PRIMER—Dynamite primer goes at bottom of hole. To keep surface water out, crews load holes right after drilling.

ROADBUILDER ...

continued

well over a mile. Codell could have used 10 Eucs per 4-yd shovel for a haul of this length. But since this peak haul lasted for a limited time, they kept only 6 or 7 trucks with a shovel and made up the difference with scrapers.

Normally scrapers are not economical for long hauls, but using a few of them to ease the pressure on trucks at the peak period allows Codell to keep up a steady production with a much smaller fleet of trucks.

Neither winter nor darkness slowed the work. The cold weather even helped, because it kept the roads hard. At night Codell works an 8-hr shift by lighting the digging area with portable floodlights.

Drilling and Blasting

Codell does most of the blasting with ammonium nitrate, and they are pleased with the results. It is cheap, and it does an efficient job of breaking rock. It has the disadvantages of being useless when wet and of requiring large drill holes.

Codell figured they needed at least a 6-in. dia hole and they didn't have that kind of equipment in the area. So they sub-contracted the drilling to Cambria Drilling Co. of Johnstown, Pa., who moved in with a truck-mounted Davey rotary air drill that handles the 6-in. holes with no trouble.

Holes average 24 ft in depth;



CHARGING THE HOLE—Men pour ammonium nitrate loose into hole. They will space short sections of primer at intervals and fill top part of hole with earth stemming.

some are as deep as 40 ft. Spacing of holes is about 12x12 ft.

Codell puts a 5-in., 25-lb dynamite primer in the bottom of the hole with two or three shorter primer sections spaced throughout the hole. To keep water out, they load the holes as soon as the drill is finished. They have found that a small amount of dampness in the rock does not affect the blasting, even though they pour the ammonium nitrate loose into the hole. But when they hit a really wet area they have to substitute dynamite.

Codell is happy about the blasting results. They use about ½ lb of explosive per yard of rock. They estimate the cost of am-

monium nitrate at about 7¢ per yd of rock, where dynamite would have cost 18¢ per yd.

One interesting sidelight on the job: The excavation is in the rich coal area along the Ohio River, and Codell has uncovered quite a bit of coal. So far they have used the unprocessed coal only to fire the stoves in their temporary buildings where it makes a cheap though somewhat smelly fuel. But they are keeping an eye on the quantities available, and if it looks feasible, they may try to peddle some of the excess to plants in the area.

A. H. Brantley, Sr., is superintendent for Codell. Frank R. Barton is office manager.

FOUR PRACTICAL REASONS WHY THIS CONTRACTOR SWITCHED TO SKIL

1 117% More Power

CONTRACTOR: "The point I want to make is that I'm satisfied with the portable saw I'm using. But I would like to ask what you believe is the difference in your Model 77?"

SALESMAN: "The difference is so great that we offer it as proof of the SKILMANSHIP built into this saw. Consider the horsepower that this Model 77 generates. At maximum it has 117% more power than other models of the same size and price. It means power for even the toughest cuts."

2 Worm Drive Produces Hi-Torque

Q. "Oh, I agree that a high horsepower rating is impressive. But what guarantee do I have that this power gets to the blade—that it will cut fast in wet lumber or resinous wood?"

A. "Model 77 has the only real guarantee offered in any power saw. It's made with worm gearing. It produces tremendous torque to keep the blade cutting at high speed in just the situations you mention—wet lumber or resinous wood. And it is easier to cut accurately, too."

3 Rifle Sight Cutting Accuracy

Q. "Why do you think it is easier to cut accurately with this rear-handle type of saw?"

A. "Because you can see the cut. With the blade on the left side, I can see the sighting notches as well as the blade. When you can see the cut, you know it's accurate. The rear handle design gives better balance too. Centered over the line of cut, it gives rifle sight cutting accuracy."

4 Free on-the-job Trial

Q. "Would you let me make a couple of cuts with it? I've never tried a rear-handle saw and I'd like to see for myself."

A. "I can do more than that, sir. I am going to leave this saw with you today. Use it on the job every day for ten days—if you like. Give it as much abuse as you can. Try it in all types of material, on all types of cuts. Prove it to yourself. Prove the value of more power, hi-torque and rear-handle operation."

On-the-Job Proof of SKILMANSHIP*

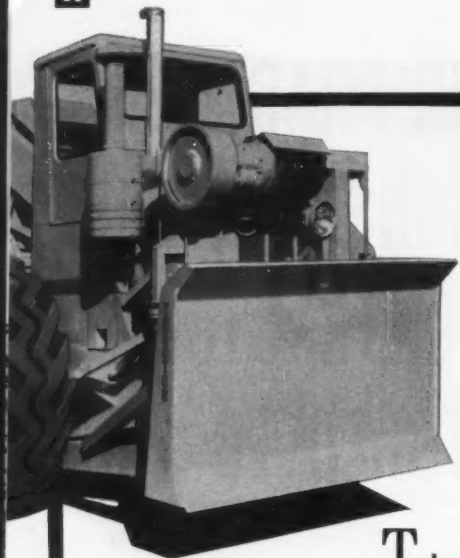
This was the first opportunity this contractor had to try a SKIL Model 77 Rear-Handle Saw. His local distributor salesman gave him a simple ten-minute demonstration which proved how practical this saw is on the job. For example, with 117% more power, this builder found he could cut any material faster and easier, saving time and effort. The tremendous torque provided more

versatility. He could count on sustained blade speed in any material. What's more, the in-line vision resulted in more cutting accuracy. The work fit exactly after every cut. You, too, have the opportunity to see and try any one of the eight rear-handle models with blade sizes from 6½" to 12". Ask your local SKIL distributor for an on-the-job Proof Test.

*SKILMANSHIP is the ability of SKIL Tools to do any job with more power, easier handling and top performance.



Made only by SKIL Corporation, manufacturer of famous SKIL & SKILSAW PRODUCTS, 5033 Elston Avenue, Chicago 30, Illinois. In Canada: 3601 Dundas Street West, Toronto 9, Ontario.



Contractor Nick Pinello analyzes 420 hp pusher

Today's big-yardage contracts pose a new problem in earthmoving: how to push-load the big 18 to 27-yd. scrapers now becoming standard. The most common solution... using 2 crawlers in tandem... is far from satisfactory. Positioning is slow, complicated; power is lost as 3 machines and 3 operators try to synchronize; and the operating cost of the "extra" machine and operator is substantial.

Nick Pinello, Colorado Springs, is one of the big-yardage contractors who have found a much better answer; the LeTourneau-Westinghouse Twin-C*. This 40-ton pusher is actually 2 rubber-tired tractors in one. Its

twin 210 hp engines are controlled with a common throttle, and joined thru a geared, kingpin yoke. Identical torque-converter constant-mesh transmissions match pusher speed to scraper speed.

Pinello has worked his Twin-C since early 1956—racking up over 2600 hours of service on a variety of projects, during all 4 seasons, in a wide range of materials. *How has this big 420 hp unit stood up? Has it done what it was intended to do? How does it compare to a pair of crawler tractors? How good is it?* Pinello here tells us, in his own words, his answers to such questions.

Here's how Nick Pinello feels about his 420 hp Twin-C after 14 months, 2600 hrs.

Q. First of all, Mr. Pinello, on what type of job do you use your Twin-C pusher? Does the size of the project, for instance, determine whether you'll use it or not?

A. We've been using the Twin-C on just about every kind of job. And no, the size of the project doesn't matter too much. As far as yardage is concerned, I don't believe there's any job too small for it. If you can work any kind of Tournapull®, it's feasible to use the Twin-C. Remember, you can take a couple of scrap-

ers and this pusher and run across town with them, right to the job... and the minute your scrapers are working, so's your pusher. There's no trucking expense for your pusher.

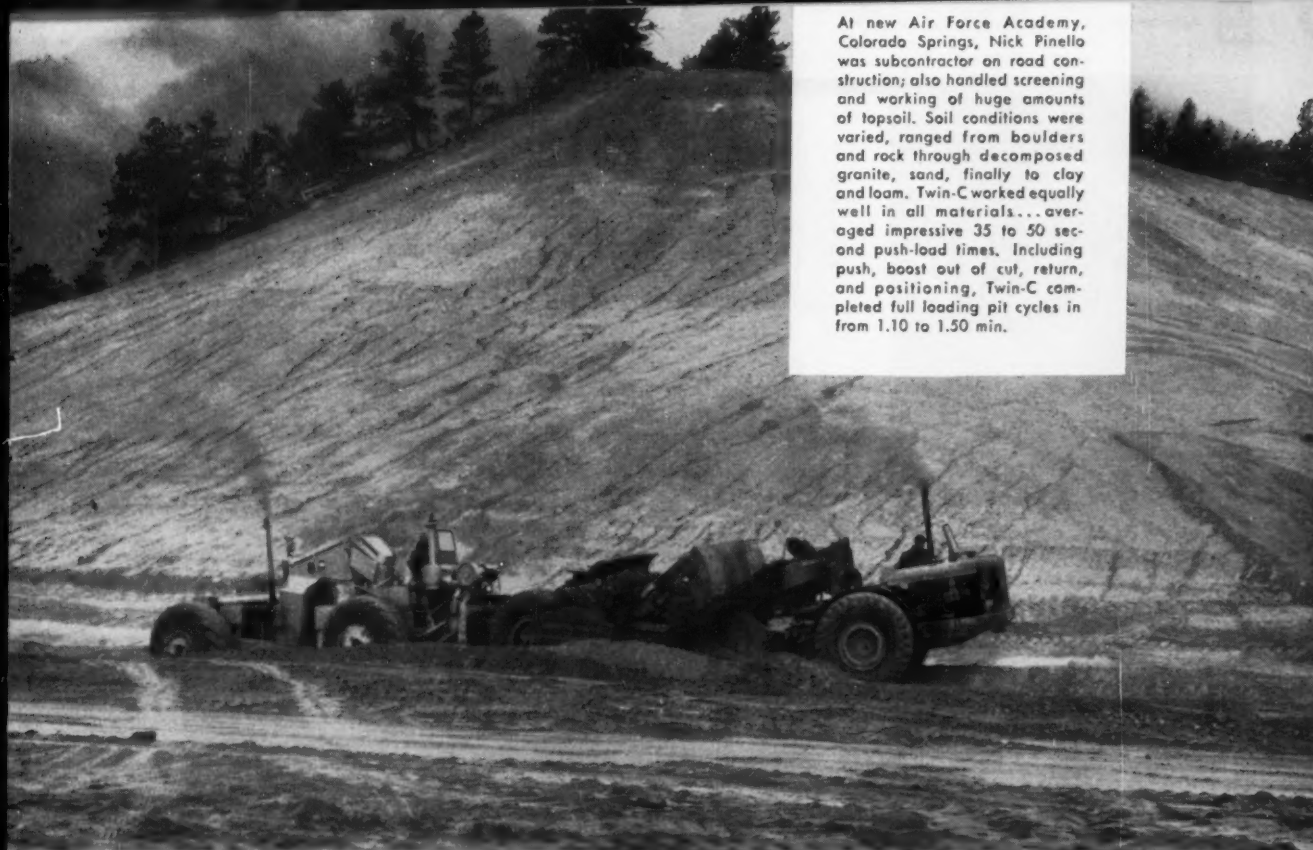
True, you have to have enough room to maneuver the Twin-C. I'd say the smallest pit you could use the Twin-C in would be about 200 feet. Usually I figure about 100 feet to load with the Twin-C.

Q. What about the soil... the materials you'll work the Twin-C in?

A. We have used the Twin-C in all kinds of soil. Rocky soil, for instance, doesn't give us much trouble. We've worked in boulders that cut our scraper bottoms and cutting edges and stopped our crawler tractors cold, yet the Twin-C stood up.

Some material, of course... like fine sand... is tough to load no matter what you've got pushing. It has no boil to it... it's just dead, and no crawler or any other type of machine can get big production in it.

At new Air Force Academy, Colorado Springs, Nick Pinello was subcontractor on road construction; also handled screening and working of huge amounts of topsoil. Soil conditions were varied, ranged from boulders and rock through decomposed granite, sand, finally to clay and loam. Twin-C worked equally well in all materials...averaged impressive 35 to 50 second push-load times. Including push, boost out of cut, return, and positioning, Twin-C completed full loading pit cycles in from 1.10 to 1.50 min.



Q. Do you use the Twin-C only with your big scrapers?

A. I use it with the 25-yard** B Tournapulls, sure...but I also use it with my 18-yard "C's". It does a good job with both, so why not use it with both?

Q. What about weather, Mr. Pinello?

lo? Does that determine whether you'll use your Twin-C as against, say, tandemed crawlers?

A. Well, I've never seen wetter weather than we've had this year...yet we've been using the Twin-C continuously. Actually, you can use it in any weather conditions where you can use a crawler or any other

piece of machinery. If the weather's good enough to move dirt at all, the Twin-C can work. In fact, I think the Twin-C will push in weather that'll stop a crawler.

**Current Model B Tournapulls have 27-yard Fullpak* scrapers, and load even more easily with the Twin-C.

Continued: Nick Pinello talks performance...production...comparisons...next page



National construction magazines covered the story when Nick Pinello used big fleet of earth-moving machines to move 840,000 yds. for shopping center at Colorado Springs. Running the project with the precision of a clock, Nick finished 30 days ahead of schedule, without working his machines to capacity. Twin-C pushed two 25-yd. B Tournapulls on this job; 3-unit team moved 5,000 yds. a day, on one-way haul of 1,200'. Big scrapers were loaded in average of only 40 seconds.

*Trademark



"The thing to remember on timing," says Nick Pinello, "is to time *everything* . . . not just the loading. And put 'em on the scales . . . that's where the difference shows up."

When a gigantic flood all but destroyed the farm and ranch of the Pinello family on Memorial Day, 1935, the men of the family got to work in a hurry. In short order, they bought a dragline and bulldozer, pitched in to restore the land. The results were so good a neighboring landowner asked if they'd clean up *this* place. "That was the start of it," says Nick Pinello.

From there, the route to becoming one of the busiest earthmovers in his part of the country was a fast, uninterrupted trip. Today Nick has handled jobs like an 840,000-yard grading project for a shopping center at Colorado Springs . . . or roadwork at the big, new Air Force Academy in Colorado . . . with equal ease and efficiency.

Where equipment is concerned, he has either owned or is familiar with, every major tool available to the earthmover. He's worked with most of the old, and new, crawler-drawn L-W scrapers; began using self-propelled Tournapulls in 1953. No matter what equipment he's using, however, a good share of Nick's success can be attributed to his ability in management. He's a firm believer in time tables, precision-schedules, and meeting those schedules.

PINELLO STORY (Continued)

Q. *Is there anything different about the way you'll work your Twin-C, compared to a crawler, for instance . . . any special techniques or methods?*

A. No, sir. It's a big, fast, powerful pusher, and we use it that way. One noticeable difference from standard crawler-operation is that it's better for the Twin-C to back up than turn around after making a push. It can back up fast and then be right in position to make instant contact with the next machine. We usually try to plan on having one scraper pull into the pit and start making its cut at just about the same time the other scraper is picking up and leaving for the fill.

If you've got a big cut, of course, we can step-load. Here at the Air Force Academy, for instance, some of our cuts were a thousand feet long. So the Twin-C kept pushing scrapers, one after another . . . "stepped" along the length of the cut. When it got to the end of the cut it would turn around and come barreling back to start all over again.

As far as an operator is concerned, the best Twin-C operator is probably a man experienced on the Tournapull . . . because it, too, is a high-speed machine. Things move fast when you're pushing with a Twin-C, so he has to be quite alert . . . quick to make a decision.

We hydroflate our tires for extra weight on the machine. The Twin-C has plenty horsepower to handle this extra weight.

And one of the biggest differences, of course, between working this Twin-C and crawler-type tractors is that, to move the Twin-C from job to job, we just drive it down the highway. We haven't had any problems, by the way, getting permits to move the machine.

Q. *In general, Mr. Pinello, how has your Twin-C been performing for you?*

A. I'm more than satisfied with its performance. Average loading time, using it to push B Tournapulls (the 25-yarders), will run about 35 seconds. That's our average. Sometimes you can load them in 25, and other times, in loose material, it'll take 45 seconds.

In our cuts, by the way, the scraper operator is the boss. When he feels he has a load, he picks up and gets moving. My boys usually pick up and go when they have a nice, rounded load. They don't spend a lot of time trying to cram in an extra half yard.

Q. *Have you done any time-studies on pusher work?*

A. Yes, we've done quite a bit of comparing of cycle times between the Twin-C and crawlers. On one recent study here, on a 3,000-foot cycle, we found that the Twin-C was cutting a *whole minute* off the scraper cycle time — compared to the same scrapers push-loaded with a big crawler.

The surprising thing you know: of that minute saved, only about 20 seconds was saved in the actual loading. But the thing to remember, on timing, is to time *everything* — not just the loading.

What was happening on our cycles was that the Twin-C was *making contact* with the scraper a lot faster ... saving 10 to 15 seconds right there. And then, when the pushing was done, the Twin-C would follow the scraper up, and give it that *extra boost* to get it into 3rd or 4th gear and out of the pit. That added another big saving of time ... our figures showed this speed-up push, cut up to 20 seconds off each cycle. Add this to the *positioning and loading* savings, and there's your minute.

And anytime you can cut a minute off a cycle, I'm happy. On a couple of hundred cycles a day, those 100 minutes add up to a lot more pay-yards moved!

And speaking of pay-yards, we're convinced that with the Twin-C pushing, you not only load faster, but you get bigger loads, too. That's because the first 15 yards or so go in so fast that it's compacted. You're not only getting dirt in there, you're

Says Pinello: "I've found it's faster maneuvering, gives more actual push, and, most important, you load more yards."

getting compacted dirt. That's a hard thing to see just looking at a scraper. But we ran tests ... put the scrapers over the scales ... and that's where it showed up. The loads would look identical — push-loaded by the crawler and loaded by the Twin-C. But when they went over the scales, the loads push-loaded with the Twin-C would be anywhere from 3,000 to 6,000 pounds heavier!

Q. What about your scraper speed with the Twin-C pushing?

A. The scraper operator has to work right along with the Twin-C when they're loading. He keeps "revved up" just about the same as when a crawler's doing the pushing. The big thing, though, is that, "revving up" like that, he's moving forward so much faster ... with no

slippage on his tires ... which, incidentally, saves your scraper tires.

Our Twin-C uses about 10 gallons of fuel an hour ... while my big crawlers use about 8 gallons an hour. Considering that the Twin-C has two engines, that's not bad. And that fuel consumption is in really heavy pushing work.

Q. Are there any basic disadvantages in pushing with the Twin-C instead of crawler-type tractors?

A. I haven't found any disadvantages. The advantages are all with the Twin-C. I've found that it's faster maneuvering, gives more actual push, loads faster, and most important, you load more yards with the Twin-C.

Some of its features are really stand-outs. The floating push-block is fine, for instance. It makes it easy for the operator to follow the scraper on through. He just lines up the push-block, then goes. Visibility on the Twin-C is excellent. And the differential means you're always driving. What really pays off, though, is the instant shift. It lets you get into a higher gear fast, to help push the scraper out of the cut.

Continued: What about maintenance? ... Tires? ... Electrics? ... Attachments? ... See next page

SPECIFICATIONS (Twin-C Tractor)

OVERALL MEASUREMENTS

Length	28' 10"	Wheelbase	15'
Width	9' 9"	Gauge, center to center tires	7' 3"
Height	11' 4"	Ground clearance	18"

TIRES

Standard.....29.5-29, 22-ply rating, Traction

STEERING

Positive power steer, electric control all wheels drive in turn
Maximum turning angle.....60° left and right
Width required for 180° turn.....43' 8"

BRAKES

Multiple-disc air brakes on all four wheels
Square inches of braking surface.....3,690
Automatic emergency braking system.....Standard
Parking brake.....Standard, mechanical

WEIGHTS

Shipping weight, approximate.....80,400 lbs.

HORSEPOWER

.....420 HP

ENGINES

Two, synchronized, General Motors 6-71
Maximum Brake HP of each.....210 HP @ 2000 RPM
Number of cylinders in each.....6
Operating cycle.....2 cycle
Horsepower rated at.....1500' altitude @ 90° F.
Maximum torque.....575 lb. ft. @ 1500 RPM
Bore.....4 1/4"
Stroke.....5"
Displacement, each engine.....425.6 cu. in.

Ea. engine w/transmission and torque converter drives 1 set of wheels.

TRANSMISSIONS.....Two Constant-Mesh-type LeTourneau-Westinghouse 7-C transmissions with two Tournaschneider torque converters

DIFFERENTIALS.....Each unit has power-transfer automatic friction type no-slip differential

DRIVE AXLES.....Heavy-duty stub axles mounted on anti-friction bearings

SPEEDS, in MPH @ 2000 RPM

1st	3.2	4th	20.0
2nd	5.8	Reverse 1st	3.2
3rd	10.9	Reverse 2nd	5.8

Speeds include 10% converter slip

PUSH-BLOCK

Height	4' 1 1/2"
Width	7' 4"
Control.....electric motor control, Push-block "floats" after contact is made to follow ground irregularities	

SERVICE CAPACITIES (U. S. Standard Measurement)

Cooling System	12 gals. each
Crankcase	5 gals. each
Fuel Tank	100 gals. each
Final Drive (Main Case)	26 gals. each
Transmission	14 gals. each
Torque Converter	13 gals. each

CABLE SPECIFICATIONS

Push-Block Hoist.....3/8" x 32'
Type recommended: 6 x 19 Filler Wire, Preformed LeTourneau-Westinghouse wire rope, Improved Plow Steel, Right Lang Lay, L.W.R.C.

OPTIONAL ACCESSORIES

Cab, cab heater, lucite windshield, defroster, windshield wiper.



**Here's what
Operator Pete Cimino
has to say:**

"I've run other kinds of push tractors, and there's no two ways about it: the Twin-C's got more push. I can push a scraper out of the cut a lot faster. And it doesn't make much difference to me whether we're working in a long borrow pit or not. This rig is so maneuverable, I can get around wherever a scraper can. It's mighty easy to get behind any scraper.

"Electrical trouble? I've never had any at all.

"The Twin-C was easy to learn to operate. Yes, sir, I've been operating equipment since 1938... and this is the best pusher I've ever seen or run."

"The Pusher," says Contractor Pinello, "is the most important piece of equipment on your spread. Anytime your high-speed scrapers are waiting for a pusher, they're not carrying pay-yards... and you're not making money."

PINELLO STORY *(Continued)*

Q. *What about maintenance, Mr. Pinello? Had much trouble with Twin-C?*

A. Except for some trouble I've had with the pinion and bullgears... and remember, you get trouble with any machine that works so hard... we've had very little maintenance work. All in all, I think the Twin-C is more economical to run than a crawler tractor.

On a crawler pusher, for instance, I figure a set of tracks, rollers, sprockets and idlers will last about 3,000 hours. That's if the tractor's been doing mainly push-loading — just about the hardest work a tractor has to do. I can get new tires for my Twin-C for far less than a set of tracks. So, even if my tires went out at 3,000 hours... the same time, in

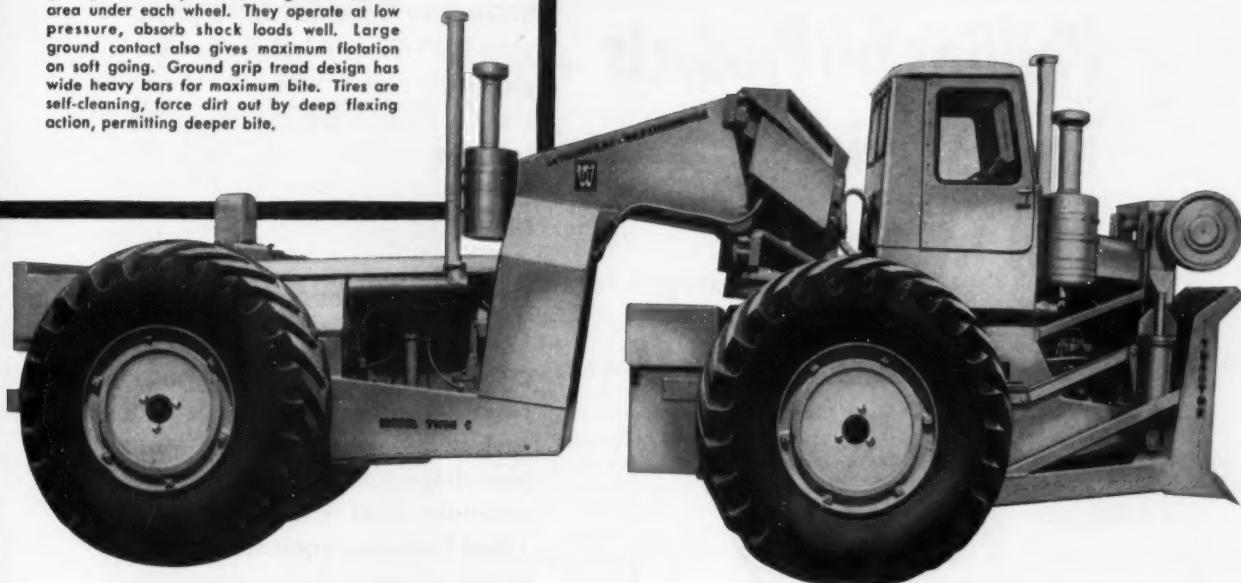
other words, as a set of crawlers... there's several hundred dollars saved right there. And re-capping the tires would save even more.

The tires on my Twin-C, by the way, are still the originals, after 2600 hours, including work right through the winter. They're in good shape, with just a little smoothness starting to show on the front tires.

Speaking of tires, one of the big advantages of the Twin-C is that its tread matches the tread of the scrapers it's pushing. That's been one of my big complaints with these big crawler tractors... their track is about 6" wider than the cut you've made with the scraper. As a result, one of the tracks... usually the right one, because the pusher operator looks over the left side of his ma-



Twin-C's four big 29.5 - 29, 22-ply rating tires give you 365 sq. inches of ground contact area under each wheel. They operate at low pressure, absorb shock loads well. Large ground contact also gives maximum flotation on soft going. Ground grip tread design has wide heavy bars for maximum bite. Tires are self-cleaning, force dirt out by deep flexing action, permitting deeper bite.



chine and keeps the left track level ... is riding half-on, half-off the ledge. Your rollers and sprockets and track will wear out on the right hand side twice as fast as on the left hand track. And this "pigeon-toed" tracking cuts down your ground contact for traction, too.

Q. How about the Twin-C's electric power system? Any problem in maintenance there, Mr. Pinello?

A. Not at all. The electric controls have given us very little trouble. My operators like the system — there's no reason in the world to dislike it. Once you get acquainted with it, trouble shooting's easy.

Every man checks his own machine before he puts it to work ... gives it a good going-over. It isn't necessary to check the connections, or anything like that. No, the only trouble we've had with the electrics is that a stator or armature will wear out. Or occasionally the control-box points will short out. But that's rare.

One big thing I like about electric controls is that you're either down,

or working at 100% efficiency. It's not like a hydraulic unit, where you could limp along for six months at 75% efficiency.

Q. Do you think the Twin-C should be fitted with attachments for dozing, or pulling?

A. Certainly not. There's nothing wrong with being a pusher and nothing else. I think the pusher is the most important piece of equipment in your fleet. Any time your high-speed scrapers are in the pit waiting for a pusher, it means they're not carrying pay-yards, you know ... and you're not making money.

When that happens, there's no such thing as a pusher being too fast, too big, or too expensive. Believe me, I'd rather have a pusher waiting for a scraper, than the other way around. And the faster your pusher can get and keep those scrapers hustling, the more pay-yards you're moving. No, I want a pusher to push ... not for incidental work like ripping, or dozing, or anything else. When the scraper is ready to be pushed, I want that pusher ready, too.

The way I see it, the pusher is part of a team that does your loading. The better matched the pusher and scraper are, the better that team will perform. I think the rubber-tired pusher, in fact, will some day be just as accepted as rubber-tired scrapers are today. Other manufacturers will produce 'em, too. They have to. You've got to match those scraper speeds with pusher speed.

Q. Mr. Pinello, you sound pleased with your Twin-C.

A. I can't praise it too highly. I can truthfully say that I've been very, very happy with my Twin-C. It's been a good, dependable machine, and made money for me. I think it's the answer to a contractor's pusher problems.

Your LeTourneau-Westinghouse Distributor has complete facts and all details on the 420 hp Twin-C rubber-tired pusher. Call him or write him.

TW-1625-DCJ-6



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Use PHILLIPS 66 HEAVY DUTY MOTOR OILS

Construction Men in the News...

Utah Construction



ALBERT L. REEVES is a new vice president of Utah Construction Co. He will be in charge of general administration and contract negotiations for the international engineering and contracting firm.

Reeves is a partner in the Washington, D.C., law firm of Cummings, Sellers, Reeves, Conner and Kendall and was a Congressman from Missouri from 1947 to 1949. During World War II, Reeves served as a Lieutenant Colonel with the U.S. Army Corps of Engineers in the China-Burma-India Theater.

Koppers Co.

FRED C. FOY is the new president and chairman of the board of Koppers Co., Pittsburgh contractors. He succeeds W. F. Munnikhuysen who retired.

Foy joined Koppers in 1948 as vice president and manager of the headquarters sales department. He became vice president and general manager of the company's Tar Products Division in 1950 and in 1954 was elected to the company's board of directors. Foy also is a director of the Kroger Co., the H. K. Porter Co., and Western Allegheny Railroad Co.

Daniel Construction

H. W. HOLLIFIELD will head a newly opened New York office of Daniel Construction Co.,

Greenville, S.C., industrial contractors.

Hollifield joined Daniel in January of this year after 18 years with leading contractors building plants for the chemical, paper, electrical, utility, and petroleum industries.

Corps of Engineers

BRIG. GEN. L. J. LINCOLN, Mediterranean Division Engineer, leaves that post to become Army Deputy Chief of Staff for Logistics. Lincoln became head of the huge Mediterranean Division in 1956. Before that he was Deputy Chief of Staff for Operations and Acting Chief of Staff, Fourth Army Headquarters, Fort Sam Houston, Tex.

BRIG. GEN. ROBERT G. MACDONNELL is new South Pacific Division Engineer. He succeeds Brig. Gen. William F. Cassidy who will join the United States Army in Korea. Gen. MacDonnell has been Assistant Commandant of The Engineer School, Fort Belvoir, Va., since 1956.

BRIG. GEN. WILLIAM W. LAPSLEY is new Ohio River Division Engineer. He succeeds Col. Rudolph E. Smyser, Jr., who is retiring from active service. Gen. Lapsley formerly was commanding officer of the Engineer Maintenance Center, Columbus, O.

GERALD D. MOORE, former U.S. Navy Seabee, is new Assistant Chief of Operations for the U.S. Army Engineer Division, North Atlantic Liaison Branch. Moore will direct military and civil works construction.

COL. PAUL H. SYMBOL, now in the office of the Deputy Chief of Staff for Logistics, will become District Engineer at Walla Walla, Wash. He will succeed Col. Myron E. Page, Jr., who will go to the Office of the Chief of Engineers, Washington, D.C.

COL. EDMUND M. FRY, Engineer, Southern Area Command, Germany, will become District Engineer at Rock Island, Ill. He will succeed Col. John L. Wilson, Jr., District Engineer since 1955. Col. Wilson will retire.

COL. ROBERT W. LOVE will become District Engineer at Mobile, Ala. He will go to the district from the Industrial College of the Armed Forces, Washington, D.C. Prior to attending the school Love was Army Member of the Standing Group of NATO.

Raymond International



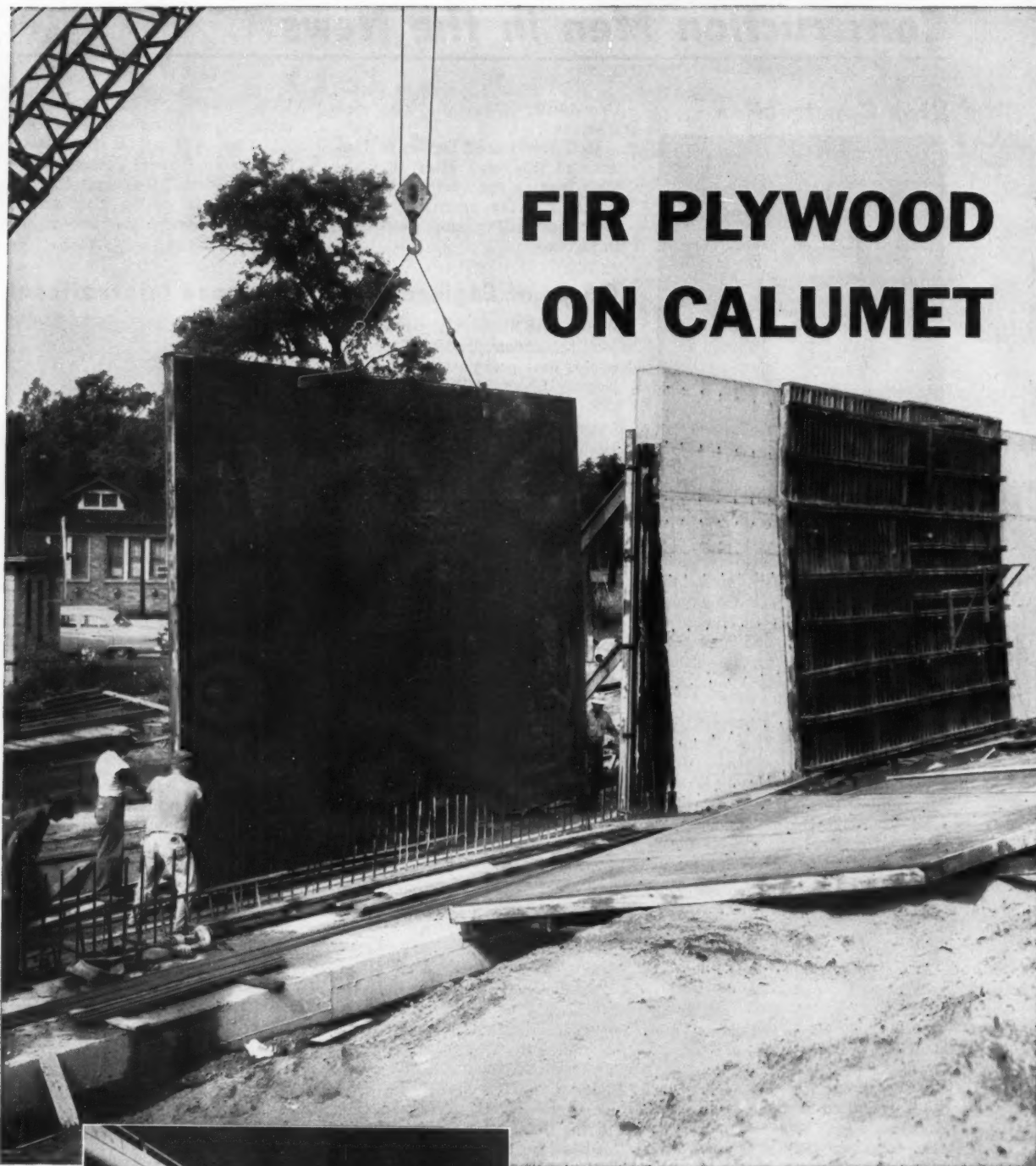
DONALD W. MOSS is new group vice president for domestic operations of Raymond International. Moss joined the company in 1936 as a field superintendent. He became a vice president in 1955.

Raymond also elected three new vice presidents. JAMES P. CUMMINS succeeds Moss as vice president for domestic sales. LINDSEY J. PHARES is new vice president in charge of domestic construction, and W. HARRELL RUSK is vice president for overseas construction.

Construction Supers

ANTHONY F. ARDIZZONE, general superintendent for the Kretzer Construction Co., is the new president of the Society of Construction Superintendents. Ardizzone was installed at a special dinner held in New York City.

Other new officers of the organization include: James Raimonde, vice president; David Shiren, treasurer; Robert A. Morey, secretary; Al Ruff, sergeant-at-arms; Al Kielytyka, historian, and Paul H. Dowe, chairman of the board.



FIR PLYWOOD ON CALUMET



Big prefabricated fir plywood form sections helped cut costs, speed work on 8-mile long Calumet Skyway.

CALUMET SKYWAY TOLL BRIDGE LOCATION:
West end of Indiana Toll Road to downtown Chicago

COORDINATING ENGINEERS:
De Leuw Cather & Company

CONTRACTORS FOR FORMWORK:
R. R. Anderson Co., Chicago
Arcole Midwest Corp., Skokie, Ill.
M. J. Boyle & Co., Chicago
J. M. Corbett Co., Chicago
Kenny Construction Co., Skokie, Ill.

FORMS SPEED CONCRETING SKYWAY TOLL BRIDGE

GIANT FIR PLYWOOD FORM SECTIONS, as large as 28' x 31', played an important role in keeping work moving at a near record clip on the new eight-mile long Calumet Skyway which links the Chicago business district with the Indiana toll road.

The job features one of the world's longest retaining walls along three of the eight miles. Over 30 feet tall in places, the wall was formed by leap-frogging the big prefabricated plywood form sections. In most instances, forms were built to maximum wall height and simply cut down for shorter walls. Plywood forms were also used for abutments at street crossings and for beams and bridge decks on overpasses.

Plywood was called for in the job specifications for uniformly smooth concrete, but contractors on the job credit plywood's ease of fabrication and handling—coupled with a high number of re-uses (up to 15 or 20 pours)—with holding down costs as well.

All told, over 300,000 square feet of plywood forms were used by the five contractors concerned with pouring walls, abutments and decks.

DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

—a non-profit industry organization devoted to research, promotion and quality control



ALWAYS SPECIFY BY DFPA GRADE-TRADEMARKS

Letters DFPA indicate material has been inspected and tested under rigid DFPA-Industry quality control program. Grades manufactured expressly for concrete form work include:

INTERIOR PLYFORM®—standard concrete form grade plywood made with moisture-resistant glue. Gives multiple (10-12) re-uses.

EXTERIOR PLYFORM®—standard concrete form grade plywood made with waterproof glue to give as many as 25 or more re-uses.

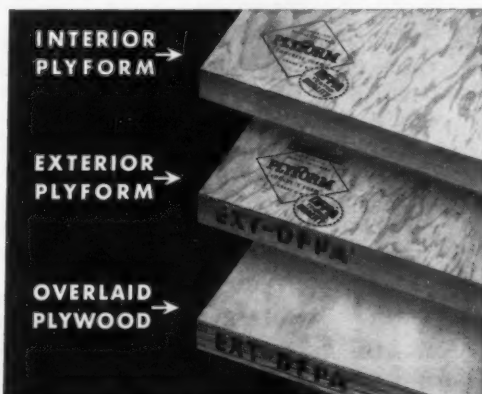
OVERLAID PLYWOOD—special panel with hard, glossy, plastic-like fused resin fiber surfaces. Forms smoothest concrete; up to 200 re-uses.



Rustication lines on walls and abutments were achieved by nailing strips to face of plywood forms.



Fir plywood was also used for forming reinforced concrete beams and deck slabs on entrance ramps.



WHY AIRCO TUNG TUBE?

*because
it gives
you*

TOP RESISTANCE TO SEVEREST ABRASION

* Airco Tungtube electrodes are pure tungsten carbide—next to diamonds, the hardest commercial material known.

* Tungtube is outstanding for use in hardfacing grinding wheels, drill bits, metal working machinery...

Airco Tungtube comes in screen sizes 10-20, 20-30, 30-40, and 30-down. In both bare rod and coated form. Accepted as standard for cutting non-metallic substances such as coal, shale, and granite.

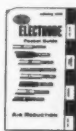
FREE—Send for the handy Airco Electrode Guide. It will help you select the right electrode for your specific job. Request catalog 1318.

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AIR REDUCTION SALES COMPANY

A division of Air Reduction Company, Incorporated
150 East 42nd Street, New York 17, N. Y.



Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributor Appointments

Baldwin - Lima - Hamilton Corp.: The Construction Equipment Division has appointed the following distributors for asphalt plants and equipment: White Star Machinery & Supply Co. of Wichita, Kan.; Jess McNeel Machinery Corp. of San Antonio, Tex.; Blanchard Machinery Inc. of Miami, Fla.; Bogie Equipment Co. of Lexington, Ky.; Western Machinery Co. of Phoenix, Ariz.; Construction Equipment Co. Inc. of Portland, Me.; and Werckle Construction Equipment Co. of Rockford, Ill.

Ford Motor Co.: Courtesy Motor Sales, Inc. of Chicago, will handle the Ford line of extra heavy duty trucks.

Chrysler Corp.: The Marine and Industrial Engine Division has appointed Sirco, Inc. of Key West, Fla., and Standard Auto Parts Co. of St. Louis, Mo., as distributors.

General Motors Corp.: The Detroit Diesel Engine Division has appointed Williams & Lane, Inc. of Berkeley, Calif., and Hicklin-GM Diesel, Inc. of Ankeny, Ia., as distributors.

Cleveland Trencher Co.: The following two distributors have been appointed: A. T. Green Machinery Co. of Pittsburgh, Pa.; and West Virginia Tractor & Equipment Co. of Charleston, W. Va.

L. B. Foster Co.: The company has been named a distributor for Dresser couplings.

Schild Bantam Co.: LeRoi Equipment Sales Co. of Elmhurst, Long Island, N. Y., is a new distributor for cranes and excavators.

continued on page 169

SAUERMAN Field Reports...

TWO DIFFICULT JOBS MADE EASY



DIGGING A PIPE TRENCH
across a river. DragScraper and carrier travel the crane's hoisting line. After inhauling the load, the DragScraper is gravity-returned to the excavation point. (Request Field Report 228.)



SILT REMOVAL
by Slackline Cableway keeps channel clear for irrigation project. Bucket digs, then conveys spoil to downstream side of dam. (Sauerman News No. 146.)

Request Catalog J, Crescent Buckets, and Catalog C, Slackline Cableways, for complete descriptions of these Sauerman Methods.

**SAUERMAN
BROS., Inc.** 612 S. 28th AVE.
Linden 4-4892
BELLWOOD, ILLINOIS

Big-capacity BANTAM has wide work range

... saves equipment dollars, earns more profits!

GLENN CONSTRUCTION COMPANY, CHARLOTTE, NORTH CAROLINA, shows how BANTAM's fast mobility, big capacity and wide work range let them handle several scattered jobs like this sewage disposal plant at one time with just one rig, cutting equipment investment, boosting job profits.



Here's what GLENN CONSTRUCTION CO. says:

"BANTAM's wide work range of attachments lets us handle all our jobs with this one rig!"

Take Glenn Construction Company of Charlotte, North Carolina. Their BANTAM T-35 crane on Model 300 carrier with 45' heavy-duty boom sets them up perfectly for their specialization: sewage disposal plants. BANTAM replaced a larger, slower crawler crane—giving them the rapid mobility to handle several different jobs at once... and the work versatility with BANTAM's full line of quick-change attachments to tackle many digging-lifting tasks with this one low-cost rig.

Look around you. You'll spot BANTAMS in more places doing more jobs than any other shovel-crane. They're the mark of a successful contractor—a man who can bid on more jobs and get them because of BANTAM's extreme versatility and cost-cutting operation.

Did you know that BANTAM is sized right to handle most of the day-to-day jobs you have to do? So why pay a premium for a lot of unproductive capacity when a low-cost BANTAM will do you more good and earn you more income?

Talk it over with your BANTAM distributor. He'll show you how little it takes to put a BANTAM on your jobs!

"BANTAM's mobility lets us handle several scattered jobs at the same time."

YOU CAN HAVE A BANTAM ANY WAY YOU WANT IT!



T-35 BANTAM

3 BANTAM-built carriers meet all budget and job needs. 8 tons or 100-cu.-yd.-per-hour.



C-35 BANTAM

Offers 2-speed independent travel as standard equipment for faster operation.



CR-35 BANTAM

One engine, one-man operation. Works with 10 BANTAM attachments. To 7 tons capacity.

Yours for the asking! Helpful new specification bulletins on the BANTAM of your choice. Get yours now! Schield-Bantam Company, 298 Park Street, Waverly, Iowa.

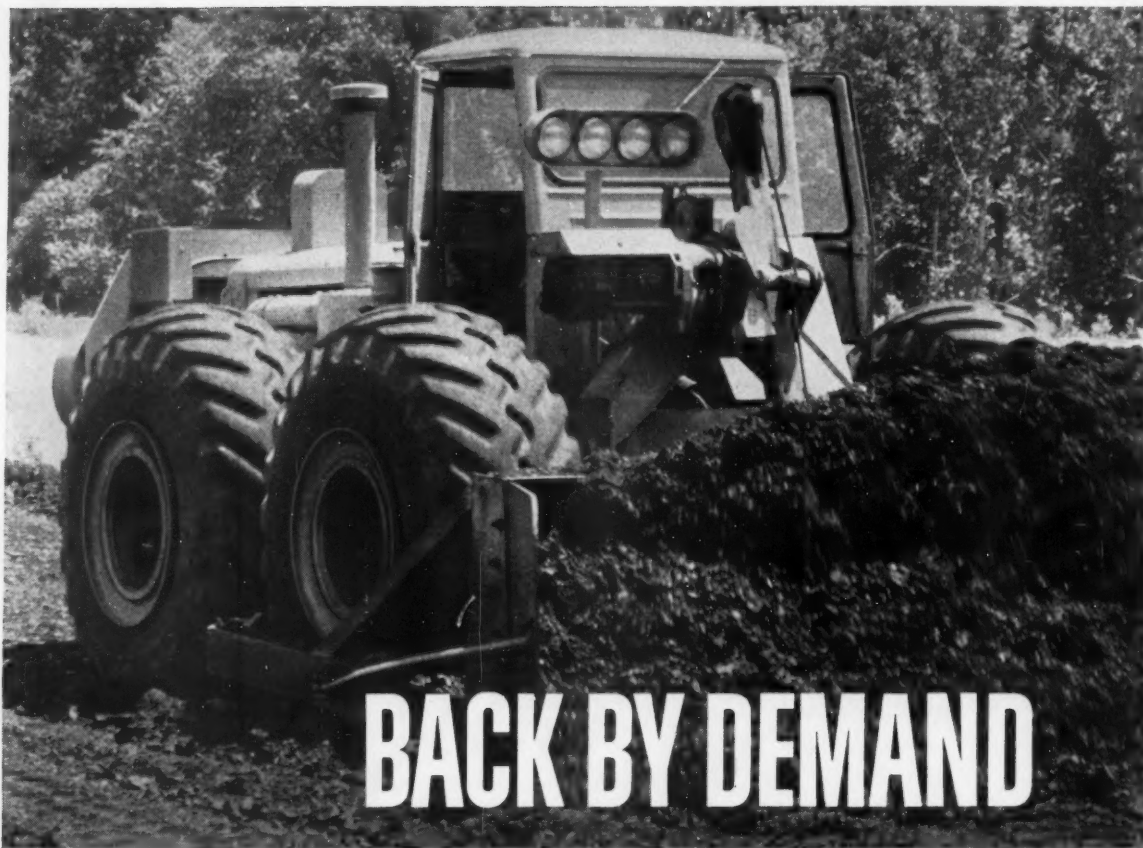
World's largest producers of truck cranes and excavators

Visit your friendly BANTAM DISTRIBUTOR... see how BANTAM benefits your picture better!



SCHIELD
Bantam Co.

221 Park Street, Waverly, Iowa, U.S.A.



BACK BY DEMAND where heavyweights roll!

Firestone Earthmover Rims with Perma-Tite air seal!



Firestone builds new strength into off-the-highway rims! *Fusion-welding* by Firestone's exclusive balanced weld design gives equal penetration inside and out for maximum strength. The new *Perma-Tite air seal* makes rim completely airtight. It's the truest rolling rim you can own—reduces sidewall flexing, results in cooler running tires, cuts downtime. It's stress-tested and specially reinforced at high strain points. For tubed or tubeless off-highway tires.

INTERCHANGEABLE in complete units or by components with all earthmover rims and parts.

SPECIAL PROTECTION against rust and corrosion for longer rim life, stronger tire performance.

PERMA-TITE AIR SEAL... the greater the pressure, the tighter the seal.

FIRESTONE STEEL PRODUCTS CO.

AKRON, OHIO

SALES & SERVICE...*continued***On the Sales Front**

Sika Chemical Corp.: The firm recently opened district offices in New Orleans, La., and Atlanta, Ga. Sika now has ten such offices. George L. Breen has joined the technical sales staff of the company. Two new district sales managers have been named. They are: John C. Weber, New York City; and Robert I. Geyer, Chicago district.

H. K. Porter Co.: The Leschen Wire Rope Division has appointed two sales representatives. Charles McKenna will work in the New England and upper New York State territory. William C. Germon will cover northern Illinois and southern Wisconsin excluding metropolitan Chicago.

Weatherhead Co.: Edmund T. Duffy is now supervising the Farm and Construction Equipment Sales Division as well as retaining his post of sales manager of the Automotive Distributor Division. In the former division he replaces John F. Hoine, who becomes sales manager of the Industrial Distributor Division.

Blaw-Knox Co.: J. P. Cullen has been named manager of clamshell bucket sales in the Equipment Division.

The Prime-Mover Co.: R. J. Sedgwick has been appointed district representative for California, Arizona, Utah and Nevada.

McKiernan-Terry Corp.: William H. Guest has been named manager of the Midwest territory for the Pile Hammer Division. He will have his headquarters in Chicago.

Raybestos-Manhattan, Inc.: Stewart Monroe is now special representative—national accounts. He will be replaced as Northeast district manager by John McKinlay.

Associations

American Welding Society: At the 39th annual meeting of the society the following men were honored for their contributions

bending fatigue...

is this your wire rope problem?



**FREE Red-Strand Service Bulletin No. 105
brings you the answer you're after!**

Do broken wires start showing up much too soon after you put a new wire rope into use? If so, costly bending fatigue is probably the explanation. Fortunately much of the expense it causes can be eliminated by following the simple procedures explained in Red-Strand Wire Rope Service Bulletin No. 105. This is one of a series devised to help wire rope users get better service without spending more money. Copies are sent on request. Write H. K. Porter Company, Inc.—Leschen Wire Rope Division, St. Louis 12, Mo.



H. K. PORTER COMPANY, INC.
LESCHEN WIRE ROPE DIVISION

Spotting Sewer Pipe with Pin-Point Accuracy!



UNIT provides ample power maneuvers easily

Here is the ideal crane for placing pipe exactly where you want it...and placing it FAST. This sturdy, dependable machine provides easy maneuverability, plus precision-steadiness. The safety-promoting FULL VISION CAB gives the operator an unobstructed view of the entire operation, at all times. Makes pipe-positioning more efficient, safer, more profitable to all concerned. On other jobs, too, UNIT is equally satisfactory. It will pay you to investigate.

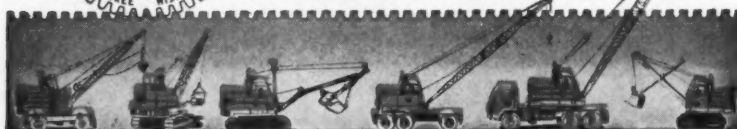
UNIT Models are available in 1/2 or 3/4 yard
Excavators...Cranes up to 20 tons capacity...
Crawler or Mobile type...Gasoline or Diesel.
All models convertible to all attachments.



UNIT CRANE & SHOVEL CORP.

6305 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared for Maximum Lifting Jobs



SALES & SERVICE ... continued

to the field of welding: R. D. Thomas, Jr.; Perry C. Arnold; E. F. Nippes; Clarence E. Jackson; Leon C. Bibber; and Lynn S. Beedle. R. David Thomas was elected vice president of the society. The following directors also were named: Jack L. York; Ernest E. Goehringer; Clarence E. Jackson; Edward C. Miller; Arthur A. Holzbaur; Frank G. Singleton; Francis V. McGinley; James N. Alcock; and Donald S. Howard.

Special Mention

White Motor Co.: White has acquired the assets of the Diamond T Motor Car Co. after several years of negotiations. Diamond T will operate as a division of White and the two organizations will continue to compete. The corporate shell of Diamond T has been rechristened DTM Corp.

Hyster Co.: Hyster has merged with Martin Machine Co. of Kewanee, Ill. Hyster Co., with no change in name is now a Nevada corporation. There will be no change in operations, personnel, or dealer relationships. Martin has always distributed through Caterpillar-Hyster dealers so the merger consolidates this distribution system.

In the Main Office

International Harvester Co.: John L. McCaffry, chairman of the board and chief executive officer will retire from these positions in May, after 49 years with the company. He will continue to serve as a member of the board. Frank W. Jenks, president, will become chief executive officer. The office of board chairman remains vacant.

Boston Woven Hose & Rubber Co.: James N. Mason has been named president of the company to succeed John M. Bierer, who is retiring. Boston Woven Hose is a division of the American Biltrite Rubber Co., Inc.

Atlas Copco Co.: J. Allan Perham has been appointed director of the Atlas Copco companies in the United States. He will co-ordinate the activities of the two groups: Atlas Copco Eastern, Inc.; and Atlas Copco Pacific, Inc.



DRY EXCAVATION

AT THE OCEAN'S DOORSTEP THROUGH STANG DEWATERING

H. C. Smith, contractor, says:

**"STANG's expert engineering, instantaneous service
and know-how KEPT OUR JOB DRY."**

"We've used Stang on many jobs, and the thing that always impresses us most is the speed of service. Saturdays, weekends, day or night, when we call them, they're here. Besides the service, we depend on their engineering. Because they're experts in handling water, they invariably save us time and money.

On this particular job, we encountered several unusual and difficult water handling problems but, thanks to Stang's engineering and know-how, we kept

out of any real trouble. In our book, Stang is tops."

For the most practical and economical answer to **your** water handling problems, call on water handling specialists . . . call STANG!

PICTURED ABOVE: The Scattergood Steam Plant, in Southern California, on the edge of the Pacific Ocean. The excavation, made in beach sand, measured approximately 300' x 100' at sub-grade, with a maximum cut in the deep section of 32' below the water table.

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems
Dewatering Planning—Equipment—Service

Putting water
in its place



...anyplace!

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JOHN W. STANG CORPORATION
8221 Atlantic Ave., Bell, Calif.

Please send me your free 100 page Brochure,
"The Stang Wellpoint System."

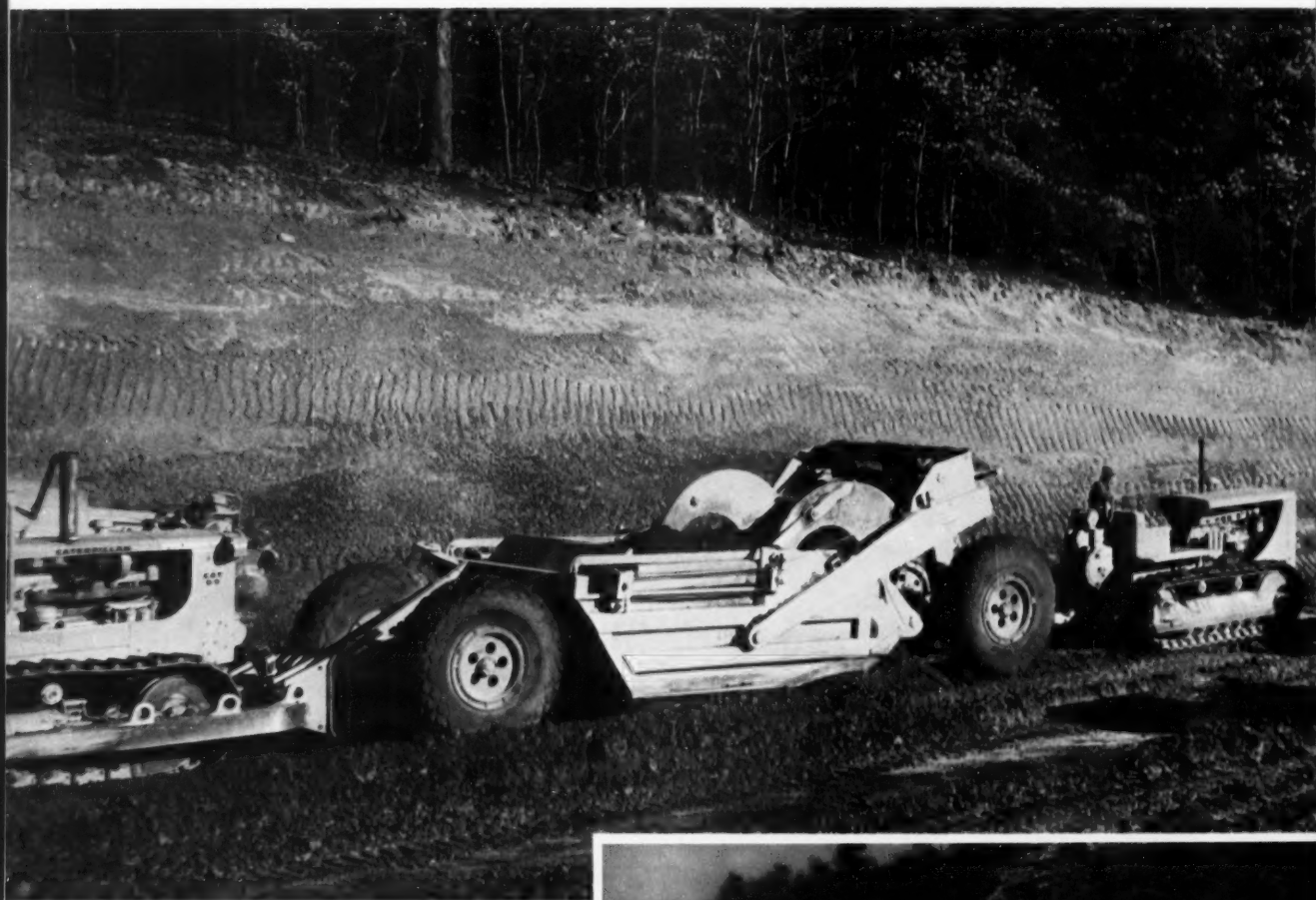
Name

Company

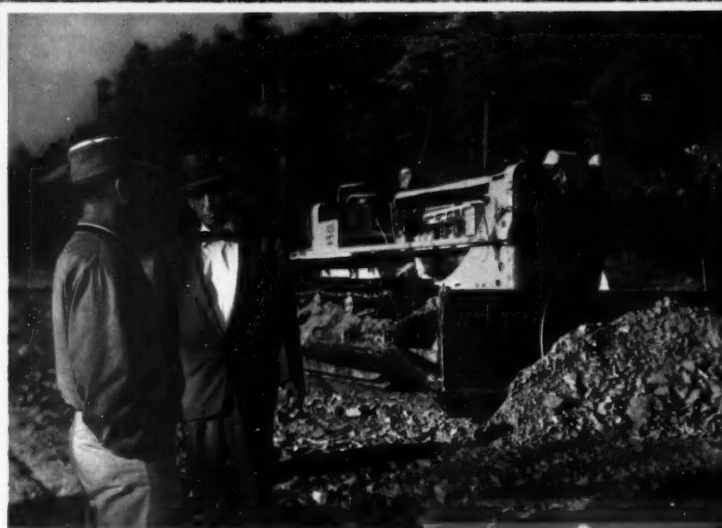
Address

City State

Penna. 66 gets a major face lifting ... Gulf helps Myers do it



Marion Hoke, Superintendent of Ralph Myers Contracting Corporation, and H. H. Hossler of Gulf Oil Corporation on the job. Gulf products and service will help Myers meet the August 1958 deadline on this 4-mile project in Pennsylvania.



The rolling hills of western Pennsylvania are beginning to take a new appearance under the Federal Highway Act. Especially around Mamont, Pa., where Ralph Myers Contracting Corporation of Pittsburgh is engaged on Federal Project F322(5). This project is 4 miles long, and involves the relocation of Route 66—with much work on connecting routes 80 and 366, including the building of an overhead bridge over Route 80. More than 514,000 cubic yards of Class I excavation is involved in the project.

Ralph Myers Contracting Corporation is a Gulf customer of long standing. Like hundreds of cost-conscious contractors everywhere, this firm depends on Gulf products and service to keep equipment rolling. They know that Gulf quality lubricants help prevent mechanical delays and—with Gulf fuels—assure top performance from engines. 1500 strategically located Gulf warehouses assure prompt deliveries. And of course Gulf engineering counsel is always available, on the job, at no cost to you.



Next job, why not have Gulf serve *you*? Meanwhile, get these two helpful booklets: "Gulf and Your Business" and the new "Contractors' Guide." Just call your nearest Gulf office, or use the coupon.



GULF OIL CORPORATION

Dept. DM, Gulf Building, Pittsburgh 30, Pa.

- ☐ Please send me the free booklet
"Gulf and Your Business"
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"Contractors' Guide"

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Spanning the Great Salt Lake...

Excavating fill for 13-mile causeway

Assigned to 6 Bucyrus-Erie electricrics



Three Bucyrus-Erie 150-B electric shovels with 8-yd. dippers are loading sand and gravel from one of the borrow areas.

Morrison-Knudsen, Inc., contractors, chose six Bucyrus-Erie 150-B electric shovels to handle the digging on the Southern Pacific's new causeway across Great Salt Lake.

On this 45-million dollar job, 32 million yards of gravel and rock fill material must be dug.

The construction schedule calls for excavation and placement of 1,200,000 yards of earth and rock fill per month. Each of the six 150-Bs often moves 10,000 tons of sand and gravel or rock per 8-hr. shift.

Three 150-Bs load sand and gravel in a borrow area. Three others load large rock from two quarries. In addition, an 88-B with 4-yd. dipper loads in a third quarry. And there's a 71-B serving as a crane or dragline as the work demands.

For the big jobs — where material to be moved is measured in "boxcar" figures — look to Bucyrus-Erie. Other successful contractors do. Call or write for full information.

144L57



A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN



One set of spare parts serves all these 18 HERCULES engines

Here's parts interchangeability to warm a maintenance man's heart! Hercules designed the new DD diesel and GO gasoline engines with the user in mind: succeeded in achieving a unique degree of interchangeability that reduces spare parts requirements for Hercules-powered equipment to a minimum.

Actually, the illustration above doesn't tell the whole story. To do that, we'd have to show 6 power units as well as all 18 models of 3, 4, and 6-cylinder engines available in the DD and GO series—a total of 24 power plants using many of the same wearing parts!

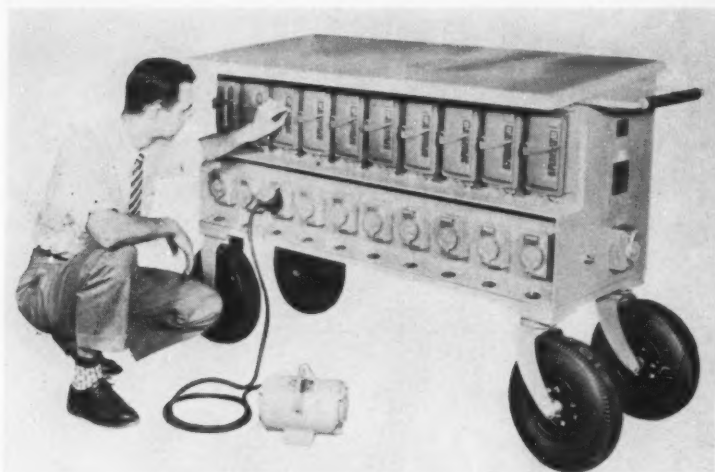
You can take advantage of this maintenance economy by specifying Hercules diesel, gasoline, or LP-gas power for the equipment you buy. If you'd like the full story on these modern engines, write Hercules Motors Corp., Canton 2, Ohio—or call your Hercules distributor: there's one in the Hercules worldwide network near you.



HERCULES

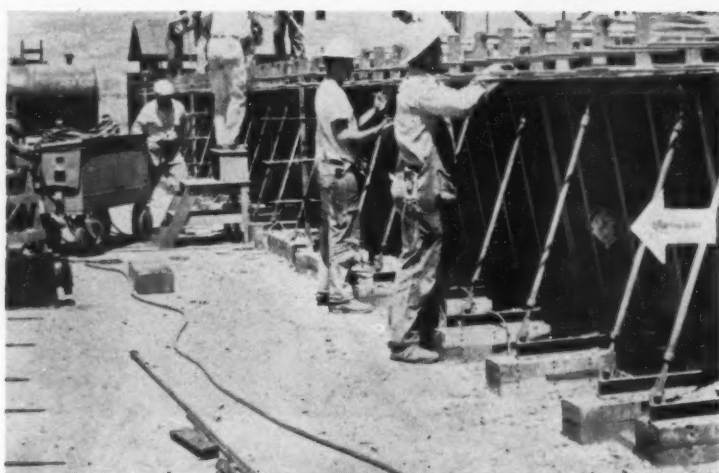
HERCULES MOTORS CORPORATION
Canton, Ohio

Construction Equipment News...



◀'Package' Vibrates Prestressed Forms

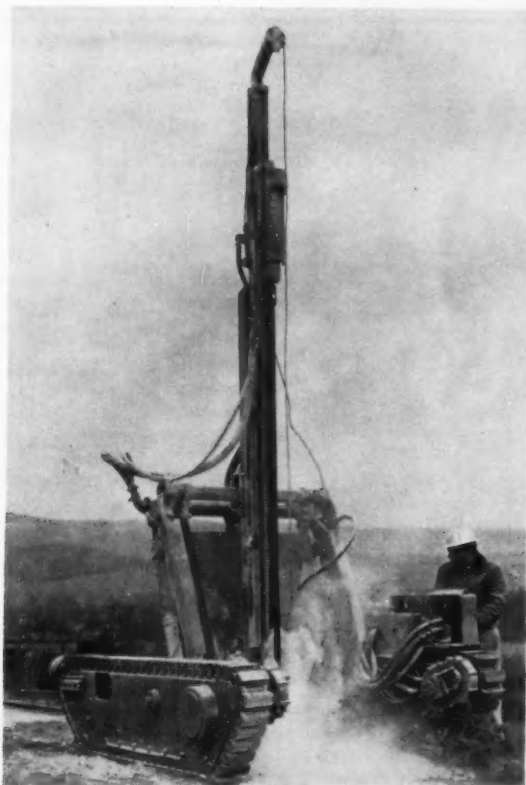
Cleveland Vibrator Co.'s new "package" for prestressed concrete forms consists of 10 portable electric vibrators that plug into a single control panel (top photo). The installation pictured shows one of five vibrators that are mounted on both sides of an 80-ft beam form. The combination of portable external vibrators and a convenient single control panel enables the units to be moved quickly from form to form. Mounting brackets, which are supplied with the system, are welded to the forms so that the vibrators can be slipped in and out easily. Two bolts hold the vibrators in the mounting bracket. The vibrators are the totally-enclosed type to provide protection during rough usage. The RC-30 vibrators shown weigh only 48 lb but they develop up to 1,100 lb of impact at 3,600 vibrations per minute. Smaller and larger electric vibrators also are available for other prestressed concrete applications.—The Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland 13, Ohio.



Loader's Wide Belt▶ Fills Scrapers Fast

Kolman's 303 loader, which features a 5-ft wide, 50-ft long belt, loaded the 19-yd scraper in the photo in 18 sec. The loader, which is equipped with a feeder-trap combination, requires a 100-hp engine. The conveyor is driven through six V-belts to a heavy-duty gear reducer. One operator controls the belt from a platform at the head pulley where he can oversee the complete operation.—Kolman Mfg. Co., Sioux Falls, S.D.



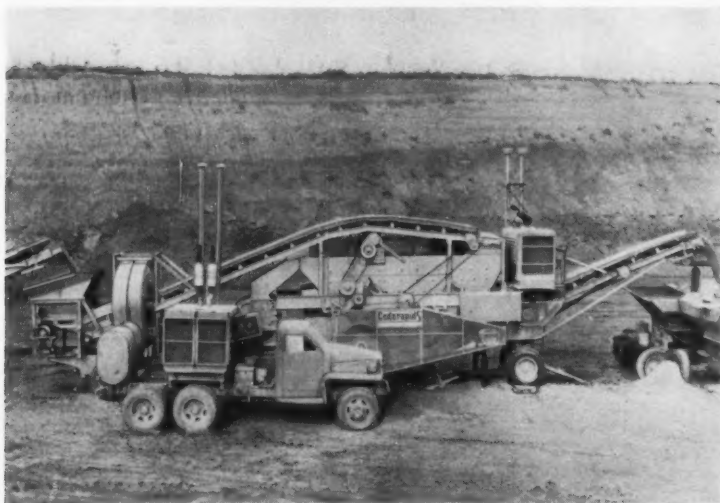


◀Joy Shows New Drill

Joy's track-mounted, air-powered TDM Trac Drill is capable of drilling 3½-in. holes to 40 ft. It also can drill horizontal holes 8-ft above ground and up-holes at any angle up to 45 deg above horizontal. Feed tilts 15 deg so that true vertical holes can be placed on uneven terrain. The chassis carries any one of five Joy drifters. Feeds for 8- or 10-ft steel changes are available.—Joy Mfg. Co., Oliver Bldg., Pittsburgh, Penn.

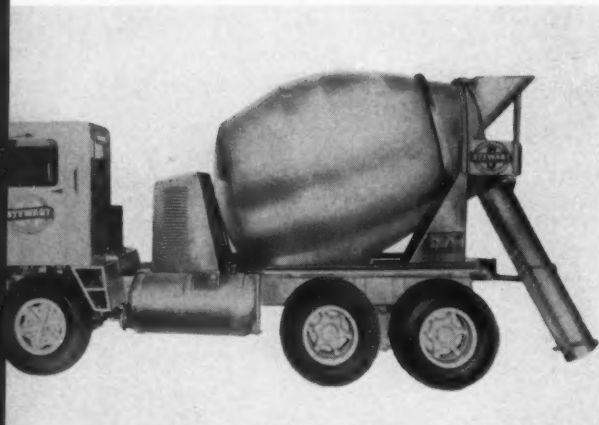
Crane Lifts 70 Tons▶

P&H's new 70-ton 775-TC truck crane features the company's Magnetorque swing design, which incorporates a frictionless clutch to provide safe and smooth swing motion. Maximum lift of the hydraulically controlled crane is 200 ft. It is mounted on an eight-wheel, four-wheel-drive P&H diesel crane carrier. With standard boom the unit weighs 133,800 lb. Outriggers and counterweights are removable.—Harnischfeger Corp., Milwaukee 46, Wisc.



◀Rolls, Hammermill Combined in Plant

Cedarapids' portable Hammerroll plant combines a roll crusher and hammermill to handle secondary crushing. Material from a 36-in. reciprocating feeder is conveyed to a big triple-deck horizontal screen. Large oversize goes to the hammermill while smaller oversize goes to the 30x25-in. crusher rolls. Finished material is re-circulated to the screen for final sizing.—Iowa Mfg. Co., Cedar Rapids, Iowa.



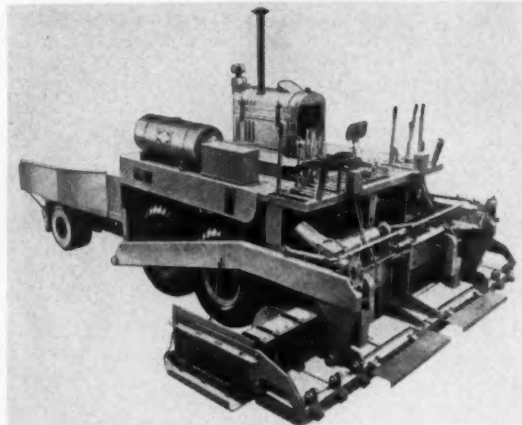
Mixer Rotates Hydraulically

The new 7-yd Stewart Hydramix concrete mixer uses an hydraulic oil pressure system to rotate the mixer—a design that eliminates mechanical linkages such as control rods, levers, chains, and sprockets. In addition, the hydraulic system reduces maintenance, cuts shock loads, and keeps weight to a minimum, according to the manufacturer. Three controls mounted on a single panel operate the mixer. A relay switch controls the drum, a hydraulic valve positions the chute, and another valve controls the pressurized water system.—**American Poxxolan Co., Box 1431, Duncan, Okla.**



Easy Way to Release Cables

Page Engineering's new Double-Wedge load sockets provide a quick and easy way to remove load cable from its socket. The design employs two wedges. One wedge is removable and the other slides back and forth in a pin-and-slot arrangement. With the cable in place, the two wedges slide forward and grip the cable when pull is applied. To release the cable, either wedge is tapped firmly with a hammer. Made of manganese or heat-treated steel, the sockets are available in 1½ through 3½-in. sizes with single, double, or triple-eye connections.—**Page Engineering Co., Chicago 38, Ill.**



New Paver Mounted on Rubber

Blaw-Knox's new Express paver, a successor of its rubber-tired PF-90 bituminous paver, features new screed, auger, and tamper designs, as well as an optional air-operated control system. The new 8-ft wide, ½-in. thick screed plate handles mix 10-in. deep and up to 16 ft wide at 7 mph. The optional air control system regulates material flow to the screed and prevents overloading of the augers. Automatic control of conveyors and augers is offered, as well as an air-traction clutch and air-actuated hydraulic brakes. The horizontal tamping surface has been increased to ¾ in.—**Blaw-Knox Co., Mattoon, Ill.**



Flexible Shaft Increases Range

The Colmonoy welder for semi-automatic application of hard-facing wire features a 14-ft flexible shaft that enables the operator to work that distance from the welding machine. A remote control "inch" button on the electrode holder allows the electrode to be advanced without leaving the work. Two simple connections (from electrode lead to machine, and from machine lead to ground) complete the hook-up. The unit works from any welding machine rated at 300 amps or more.—**Wall Colmonoy Corp., 19,345 John R St., Detroit 3, Mich.**

continued on page 180

"TO STAY COMPETITIVE"

THIS CONTRACTOR USES A **LORAIN SP-107**

This Lorain SP-107 owner (name on request), plans housing developments, builds and sells homes. As a builder, he is constantly on the alert for new and better ways of doing things—for as he says: "Only in that way can my company stay competitive."

That's why when he first heard about the new 3/8-yard Lorain SP-107 he contacted the local Thew-Lorain Distributor to inspect this machine that could give him both profit-producing digging plus real get-around mobility. He wanted a small excavator that could be dispatched to dig small basements, put in sewer laterals and storm sewers, and be a general "handy-andy" on his larger housing projects.

Convinced the agile, high-speed Lorain SP-107 was the machine he needed, he put an SP-107 to work in November, 1957.

And, this is what he reports: "Since then, this has been a busy machine. In fact, it zips around so fast that the boys call it 'Sputnik.' We sure like the SP-107's ability to get into and out of tight places. The 'square' design gives it good balance and it is able to dig from any angle" — without setting outriggers.

Here are other SP-107 features that make it a valuable contractors' tool:

- 4-wheel drive to "go anywhere"—streets, mud, hills.
- 4-wheel steering is available for maximum—even sideways — maneuverability.
- 3 or 6 travel speeds — up to 15 m.p.h.
- Torque converter plus automatic transmission . . . gives it lots of hang on . . . won't give up when the digging or traveling is tough.
- Hydraulic control of all clutches . . . the Lorain SP-107 is easy, simple and fast to operate.
- Power steering and power brakes make the Lorain SP-107 easy, simple to handle.

Your Thew-Lorain Distributor will be glad to demonstrate the Lorain SP-107. Find out the many ways you can use this profit-making contractors' tool.



Equipped as a hoe, the SP-107 digs straight-sided, square-cornered basements.



At the job site, 4-wheel, high traction drive and big-tire flotation roll the SP-107 in over soft, rough terrain. Maneuvers easily in tight places.

On the run between jobs — speeds up to 15 m.p.h. get the SP-107 into action faster — no hauling costs.

THE THEW SHOVEL CO., LORAIN, OHIO, U.S.A.

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LORAIN®**
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**BITUMINOUS CONCRETE
and AGGREGATE
Spreader
with DOUBLE
ACTION
SCREED**

THE UNIQUE RAPID-
HITCH ATTACHES THE
SPREADER TO THE TRUCK
QUICKLY AND SECURELY

GIVES AN EXTRA DENSE UNIFORMLY THICK LAYER WITH CROWN OR VALLEY!

Can be used for asphaltic concrete, pre-mix, caliche base, gravel, crushed rock and sandy top soil. The double-action gives you a highly compact, uniform layer that is exactly the same thickness from start to finish of every pass. Lays a radius as easily as driving a truck around the corner—absolutely no side slippage, and, you can pave right up to curbs and buildings. Out performs other spreaders costing much more.

NEW!

The BMCO CURBING MACHINE



SELF-PROPELLED,
REQUIRES
ONLY
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BY THE
OPERATOR

FOR ASPHALTIC
MATERIALS

WITH 6,000 POUND POSITIVE
EXTRUSION FORCE THAT

ELIMINATES CLOGGING

Easily lays up to 150 feet of 6" asphalt curb per hour... curb forms up to 12" high and 24" wide are easily interchanged... lays center line of curb within 9" of wall... eliminates the building of curb forms... produces high density curb that requires no packing... uses hot-mix asphaltic material and special mixes of Portland cement.

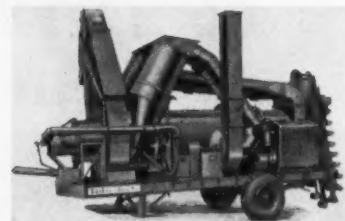


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AGGREGATE DRYER—Barber-Greene's new model 832 aggregate dryer, a rubber-tired, completely portable unit with a capacity of from 40 to 55 tph, is adaptable to either continuous-mix or batch plants of similar capacity. Both hot and cold elevators are built into the model 832. The cold elevator features a telescoping frame that provides maximum ground clearance for travel. The hot elevator is one of Barber-Greene's Roto-elevators, in which the buckets travel around the circumference of the drum at the discharge end. The frame also carries a two-cyclone dry dust collector that reclaims dust from the dryer's exhaust and returns it to the boot of the hot elevator. The dryer can be equipped with high pressure, steam atomization, natural gas, or low pressure air atomization burners. The latter is standard equipment. A 79-hp gasoline engine is standard equipment and either a 75-hp diesel or 50-hp electric motor is available.—**Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.**

DOUBLE-DUTY—A new type of conveyor belt, called the Shockmaster, has two usable surfaces so that when one side of the belt is worn out it can be turned over to expose a new carrying surface. Developed by the Quaker Rubber Div. of H. K. Porter Co., the belt is made of two or three-ply heavy cotton nylon fabric with a skim coat of rubber between plies. An envelope ply of frictioned, open-weave nylon covers the core and acts as a cushion. Top and bottom covers are made of abrasion-resistant 3/32-in. thick rubber. The design is said to make the belt unusually flexible without loss of bulk or strength. Samples are available from the manufacturer. — **Quaker Rubber Div., H. K. Porter Co., Inc. Tacony and Comly Sts., Philadelphia 24, Penn.**

continued on page 182



Tallest 5' x 7' Safway Scaffold Saves 50% on Air Duct Installation

WORKERS GET AROUND FASTER AND SAFER ON 342-FT. TOWER

AIR CONDITIONING the 34-story Koppers Building in Pittsburgh, Pa., required cutting holes at 12 different heights in a blank masonry wall—50 ft. laterally from the nearest windows. Each opening was a two-day operation.

O. H. Martin Associates, general contractors, believed that only a swing scaffold could handle this job... despite the considerable time and hazards involved in getting to and from working locations.

To eliminate these problems, a 342-ft. built-up steel scaffold was engineered by the local Safway dealer. Many advantages resulted:

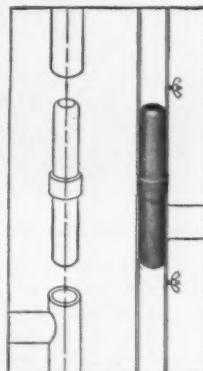
"Our cost for cutting the holes, including the Safway scaffolding, was less than 50% of that for a swing scaffold," testifies General Superintendent W. A. Kennedy. The final saving was even greater. Several holes required alterations in size and location, and the accessibility of the Safway steel scaffold made these changes simple.

SAFWAY LOAD CAPACITY DUE TO PRECISION FIT AND RIGID DESIGN

Although only 5 x 7 ft. in area from base to top, this Safway tower carried a load of about 3,000 lbs. per leg with complete safety. Such capacity results from the strong, rigid design and precision fit of Safway parts. The photo (left) shows how the assembled scaffold frames line up perfectly to form continuous 342-ft. tubular steel legs of unbroken accuracy.

Safway scaffold frames are joined vertically with simple "coupling pins" (see diagram at right). With a clearance maintained at just $\frac{1}{32}$ in., these pins slide smoothly into tubular legs of the frames below and above... providing a snug fit that assures accuracy and rigidity in assembled scaffolds.

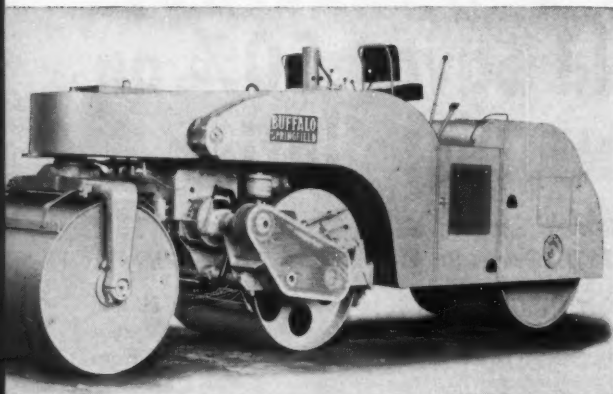
By minimizing "play" in individual couplings, Safway scaffolds reduce overall or cumulative error and thus can safely support heavy loads at great heights.



Ask for ENGINEERING HELP AND FREE CATALOG

Ask your experienced Safway dealer for scaffold planning and erection service. Ample stocks are available for sale or rental. And write direct to Safway for your copy of BULLETIN 15.





Three-Axle Roller Vibrates

Buffalo-Springfield's model KX-25VE three-axle vibratory roller has an independent power unit mounted between the end and central guide rolls. This 75-hp gasoline engine transmits power through V-belts to an eccentric axle shaft that runs through the middle guide roll to create a vibrating action. Because the end guide roll and drive roll surround the vibrating roll with a direct contact, vibration is controlled and transmitted downward. The operator controls the rate of vibration and he can raise or lower the vibrating roll hydraulically.—**Buffalo-Springfield Roller Co., Springfield, Ohio.**



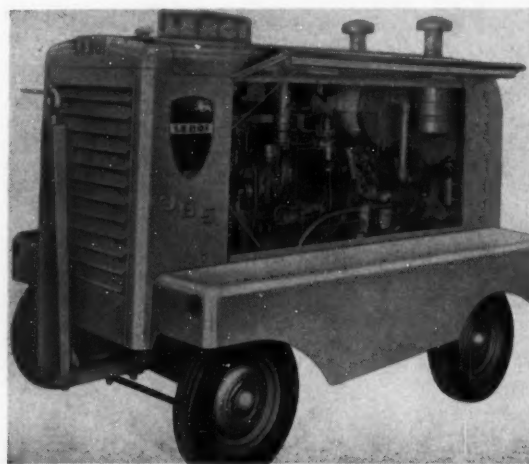
Speed Swing Now a Backhoe

A new backhoe for Pettibone Mulliken's Speed Swing loader has an 11-ft loading height, 8½-ft digging depth, and 12½-ft reach beyond the front tires. A choice of bucket sizes is available: an 18-in. bucket has a ¾-yd capacity; and a 24-in. bucket has a 1½-yd capacity. The Speed Swing features 180-deg boom swing, which provides 90-deg swing to the right or left. In addition to the loader and backhoe, other attachments for the Speed Swing include forks, crane hook, 18-ft boom extension, clam-shell and backfill blade.—**Pettibone Mulliken Corp., 4,700 W. Division St., Chicago 51, Ill.**



Supplies Power for 40 Arcs

This single 42½x56x44-in. high 15000CP welding power source, in conjunction with series resistance grids, can handle from 15 to 40 arcs at the same time on such jobs as steel erection for buildings or bridges. Both 750 and 1,500-amp, dc, constant potential units are available in waterproof housings. Silicon rectifiers allow over-all regulation that assures a constant arc current for a given series resistor setting regardless of the number of arcs operating. The units can handle arc, tack, and stud welding, as well as air gouging and inert arc welding operations.—**A. O. Smith Corp., Milwaukee, Wis.**



1,100 RPM Runs Compressor

A 365-cfm rotary air compressor is the second in Le Roi's new line. Called the model 365RD2, it is a portable, two-stage, oil-cooled, sliding-vane type that operates with a compressor speed of only 1,100 rpm. The compressor is coupled to a Detroit Diesel 4-71 engine with a hydraulically actuated clutch. The trailer has automotive-type steering, tapered roller wheel bearings, and 6.50-16, 8-ply tires for easy towing. Dry weight is 7,010 lb. It is 10 ft 5 in. long, 6 2/3-ft wide, and 7 1/3-ft high.—**Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.**

continued on page 185

24,000 LBS.

PUSH or PULL



*Assuming adequate traction

Here's **EXTRA POWER** for bulldozing,
winching, towing—at a much **LOWER**
PRICE than you'd expect to pay!

When it comes to effective work-power, comparative tests prove the new 100 HP Case® TerraTrac® Model 1000 diesel, with power-boosting torque-converter drive, can outpull any conventional tractor in its price range—*bar none!* These same tests also prove the "1000" is far ahead of the field in maneuverability and ease of handling because it is the *only* crawler in its class with a *modern* hydraulic power-shift transmission *plus* 3-way power-steering. Result—contractor-owners find it easier to attract and hold good operators because they can *do twice as much work with 90% less effort.* For free demonstration and details of new Case LEASE and financing plan, just mail handy coupon at right.



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for over 100 years

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demonstration proof

Also exclusive with TerraTrac!

- **Power-tilting blade** — You just flip two hydraulic levers to tilt bulldozer 14" right or left—for ditching, crowning roads, cutting tree roots, breaking through hard ground, etc.
- **Higher working speeds** — From 0 to 6.0 MPH forward; 0 to 7.0 MPH reverse—plus infinite number of in-between speeds, automatically balanced to changing loads by torque converter. Engine stalling is completely eliminated.
- **Instant power-shifting** — From high to low speeds—and from forward to reverse. No clutching or stopping to shift gears.
- **Full power-steering** — Independent power control of each track, with finger-tip hydraulic controls, increases maneuverability... makes operation easy as driving a modern car.
- **Torsion bar track suspension** — Smooths out bumps, maintains full traction on both tracks at all times—regardless of irregularities in ground surface.

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INDUSTRIAL WHEEL AND CRAWLER TRACTORS • LOADERS • DOZERS • BACKHOES • ENGINES

NEW BAY CITY 1½ YARD

AS A SHOVEL: digs more yards per day!

AS A CRANE: lifts bigger loads at greater radius!

Alloy Cast Steel Bases for lower base assembly and rotating base are designed to resist deflection and withstand shock loading. Your equipment dollar goes further because castings are used where castings are best. The cast lower base has a large 76" diameter removable roller path and a sturdy 10" diameter removable center post . . . the revolving base is full length to support engine, machinery and boom to give you bigger value.

Crawlers—you have a choice of standard crawlers with 9384 square inches GBA or special crawlers with 10744 square inches GBA to get the stability needed for best operation. There is extra long life built into these sturdy crawlers which make sharp or gradual turns while propelling . . . no need to stop to shift jaw clutches.

Engine Drive consists of a Twin-Disc two-plate clutch and a Twin-Disc hydraulic coupling joined by a specially arranged flexible coupling to provide a smooth, dependable power flow for all operations. Final drive is through a speed reducing unit of helical gears, splined to shafts and running in oil.

Swing Mechanism of heavy-duty construction and mounted in 8 anti-friction bearings offers quicker response, faster swing and easier operation. Internal two-shoe type clutches are manually operated thru needle bearings on hardened tapered keys, thus assuring simplest control with minimum maintenance.

Drum Assemblies packed with power features are in tandem to give best cable lead with any attachment. The hoist and front drum spools up to 470 feet of ¾" cable or 385 feet of 7/8" cable, thus providing ample cable capacity for those unusual jobs. Both drums have newly designed, self-energizing two-shoe type internal clutches and removable cast iron flanges to give long service with minimum maintenance. The heavy-duty mechanical power controlled boosters actuate the main clutches with a minimum of effort.

The **Boom Hoist** is of the worm and worm wheel type that raises and lowers boom and/or load only under power with the Erector Crane having as standard a fully independent boom hoist.



You will like the popular price of this new 1½ yard Shovel-30-ton Crane. Built to heavy duty standards, it has been proven in tough rock digging from New England to the Northwest. Here is a Shovel-Crane packed with the many outstanding features that gives you the biggest value for your equipment dollar. Look over the condensed specifications at the left—they point out a few of the high-spots that bring you peak operating efficiency, bigger performance and lower maintenance to handle the close-bid jobs.

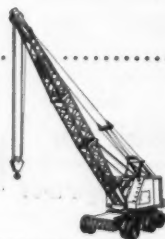
This new illustrated catalog is packed with information on the BAY CITY Model 72 Shovel, Clamshell, Crane, Dragline and Hoe. Send for your copy—no obligation.



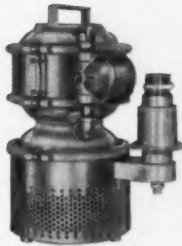
BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



New PUMP eliminates priming



- ★ simple
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- ★ quiet
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The Layton pneumatic diaphragm pump has no rotating parts. It responds instantly. Becoming a fast favorite in plants, mines, construction — wherever low-cost dewatering is needed.

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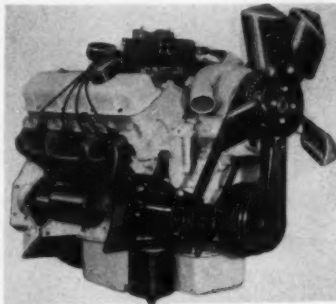
ECONOMY FORMS CORP.



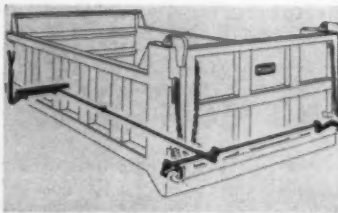
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EQUIPMENT NEWS... continued



NEW FORD ENGINES — The Ford lineup of industrial engines was almost doubled this month with the introduction of three new gasoline engines and one six-cylinder diesel power plant. The new engines increase the Ford line to 10 basic industrial engines with displacements ranging from 134 to 534 cu in. The new engines are 401, 477, and 534-cu-in.-displacement V-8 gasoline engines and the 330-cu-in. six-cylinder diesel. The gasoline engines feature new high-turbulence, wedge-shaped combustion chambers; new fuel induction systems; and full-pressure lubrication systems. The compression ratio of all three gasoline engines is 7.5:1. Brake horsepower ratings are 252 at 2,800 rpm for the 534-cu-in. engine (pictured); 226 at 2,800 rpm for the 477-cu-in. engine; and 185 at 2,800 rpm for the 401-cu-in. engine. The new six-cylinder, 330-cu-in. diesel engine is the second diesel in the Ford line. It features a 12-v electrical system; replaceable "wet" cylinder sleeves; and four-way fuel injectors that disperse fuel evenly for more efficient combustion, greater power, and better fuel economy. The 330-cu-in. diesel has a compression ratio of 16:1. Brake horsepower of the completed engine assembly is 96 at 2,240 rpm.—Ford Div., Ford Motor Co., Rotunda Drive at Southfield Rd., P.O. Box 608, Dearborn, Mich.



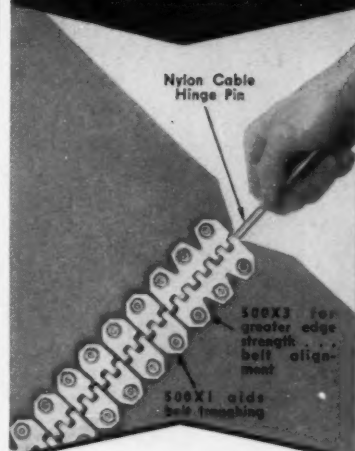
HEAVY-DUTY BODY — Heil's new dump truck body features a new type of positive acting con-

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COUNTS...

use

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**HINGED 500X
BELT FASTENERS**



UNDERGROUND COAL MINING

THE IDEAL FASTENER FOR JOINING EXTENSION BELTS. DESIGN PERMITS THE USE OF A SMALLER FLEXIBLE NYLON CABLE HINGE PIN FOR SMOOTHER, TIGHTER JOINTS.

NYLON CABLE HINGE PIN . . .

- ✓ Easy to insert or pull out . . . will not migrate.
- ✓ Smooth wearing surface—nylon is self-lubricating.
- ✓ Will not unravel when cut.

Start now to equip your extension belts with FLEXCO 500X "SEPARABLE" FASTENERS (new FLEXCO HINGED 500X FASTENERS are interchangeable with old HF 500 Fasteners).

HANDY PACKAGE



Carton contains one complete belt joint—fasteners, pin, bolts and nuts.

ORDER FROM YOUR DISTRIBUTOR
OR WRITE TO . . .

Flexible
STEEL LACING COMPANY

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boosts trench production 500%

SPRINGFIELD, N. J. contractors, Ern Construction Co., increased production more than 500% by replacing a backhoe with a Cleveland 110 on 11,000 feet of trenching for 8 and 12-inch pipe, digging 2 feet wide by 5½ feet deep.

"The 110 got us 780 feet of trench per hour where we had been getting only 100-150 feet with the backhoe," reports Ern Foreman Henry J. Appleby. "Our operator got top production with the Cleveland after only 5 days experience at the controls. He was one of our regular work crew and had no previous training as a trencher operator."

Ern also saved 25% on his repaving costs with the narrow, clean accurate trench produced by his Cleveland 110.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO



EQUIPMENT NEWS . . . continued

trol for tailgate hooks. The new device is controlled by a lever handle from the front left corner of the body. When the handle is pulled forward and down it actuates a single long rod that rotates the shaft on which the tailgate hooks are eccentrically fastened. This design is said to prevent jamming while providing positive control of the tailgate by the truck operator. Other features of the new body include one-piece sides, fully boxed side braces, double reinforcement of the front head, and steel plate upper tailgate hinges. The body, called the Model H-11, is available with Heil twin-cylinder hydraulic hoists with 6, 7, or 8-in. dia cylinders.—The Heil Co., Milwaukee 1, Wis.



HANDLED WITH PLIERS—Ordinary hand pliers are the only tool needed to assemble Aeroquip's newly developed truck air brake hose and segmented fittings. The new segmented fittings have been designed for use with Aeroquip's new 2550 type-A hose and 2570 type-B hose on heavy vehicle brake applications. Both hoses meet the requirements of SAE specification 40R2. Aeroquip type-A hose, which is available in rolls up to 60 ft, is mandrel-made to insure a constant inside diameter for positive and uniform fitting. Type-B, a rugged, low cost hose, is available in rolls up to 300 ft. The new, easily-assembled segmented fittings also will perform satisfactorily on any other SAE-approved type-A or type-B hose. Segmented fittings can be disassembled and reused again and again. Because only pliers are needed to install hose, the fittings allow on-the-job replacement in the field. Because they are used with bulk hose, large inventories of ready-made assemblies are eliminated. Typical hose and fitting applications

BEST GREEN CONCRETE

BLADE YET!

In a recent test cutting 3 day concrete, one Felker DI-LOCK diamond blade cut a total of 8,000 feet 1" deep against 3,500 to 5,000 feet for competitive blades cutting to the same depth! Aggregate was gravel, flint and quartz. Blades were all operated on the same 36 h.p. concrete cutter and on the same job.

THIS IS ANOTHER TYPICAL CASE HISTORY OF DI-LOCK SUCCESS—

Reports keep pouring in from all over the nation with the same impressive facts... *more footage, faster cutting, greater economy per blade!* If you want lower cost per cut there's one *sure* answer proved by contractors from coast to coast! Specify Felker DI-LOCK'S, America's *longest-lived* diamond blade!

See your Felker Distributor or write for information.



*Full line of Felker Concrete Cutting Machines!
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First in Diamond Cut-Off Blades!



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It happens every time. When clearing is involved, one man with a Homelite Chain Saw can clear the way for construction faster and for much less money than ever before. You save dollars right from the very start. With a Homelite One Man Chain Saw you can cut 8" hardwood in 4 seconds, 18" pine in 12 seconds. You can bring down trees 7 feet or more in diameter. You can do your notching, felling, limbing, bucking, undercutting, boring in

money-saving time. Very light in weight . . . as little as 19 pounds. Very easy to handle . . . cuts right, cuts left, cuts up or down. It even cuts upside down.

Famous for their light weight, speed and dependable performance. There's a full line of Homelites from 4 to 7 horsepower . . . 19 to 29 pounds (less guide bar and chain). Brush cutters and special clearing saws available for small timber and brush. See what's best for you.



Homelite chain saw dealers and Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call or write for convincing demonstration or fast service in any way.

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Homelite Now Has Full Line of Carryable Construction Equipment



Self-Priming Centrifugal Pumps... Carry these lightweight, dependable pumps anywhere. Non-clogging design... 28 foot suction lift... capacities up to 15,000 g.p.h. ... sizes from 1½" to 3". Diaphragm pump also available.



Builders' Hammer... 110 volt AC-DC or High-Cycle models. High-Cycle Paving Breaker and Rock Drills also available.



Carryable Gasoline Engine-Driven Generators... Lightweight Homelite generators can be carried and used anywhere to provide high-cycle and 115 volt power for your electric vibrators, tools and floodlights. Complete range of sizes up to 5,000 watts... all standard voltages.

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1005

EQUIPMENT NEWS... continued

include tractor-to-trailer lines, axle chamber lines, and tractor service lines on trucks and off-the-highway equipment. Male pipe and swivel nut fittings are available with or without spring guards.—Aeroquip Corp., Jackson, Mich.



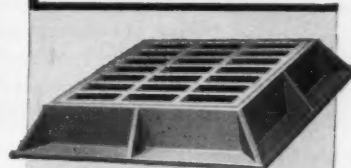
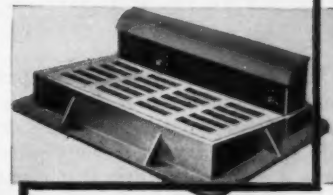
LOW-COST TRAILER—Rogers Brothers Corp. has added to their extensive line a utility trailer that weighs only 9,000 lb, yet has a capacity of 25 tons. The liberal use of high-strength, alloy steel keeps weight of the trailer, called the TVT, to a minimum. A beaver-tail extension permits easy loading and also enables the trailer to carry longer loads. The open-type body permits handling of a wide variety of loads.—Rogers Brothers Corp., Albin, Penn.



COMPACT HOIST—A new air-operated chain hoist that weighs only 30 lb and raises half-ton loads at a rate of 50 fpm has been developed by Thor. The hoist, called the model H-1000, is powered by a reversible eight-blade

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Contractor Driscoll completes \$101 million of construction in five years...

... and the man who heads the operation is
Fred J. Driscoll, President, Geo. F. Driscoll Co.

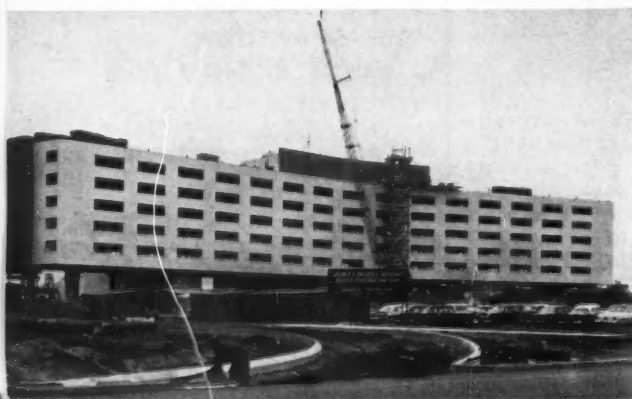
The role of the construction business in the nation's economy is unparalleled. Contractors are literally changing the face of America. And the wide variety and tremendous quantities of materials, equipment, and manpower used by contractors make construction one of the nation's largest industries.

The George F. Driscoll Company is an important contractor and Fred J. Driscoll is its president. Mr. Driscoll is a typical active president who personally guides and directs the many phases of his business. From a contracting firm that was established in 1902 with less than \$1,000, the Driscoll Company has grown to a multi-million dollar a year organization.

From his offices in New York City, Fred Driscoll runs an organization that boasts:

- \$30 million of completed construction in 1957
- \$101 million of construction in 5 years (\$25 million in Venezuela)
- An average of 600 employees
- A \$3,100,000 payroll in 1957

Over the years, the George F. Driscoll Company has constructed one sixth of all New York City housing projects. This comprises approximately 20,000 dwelling units valued at \$127,000,000.



Millions of dollars of construction materials purchased in 1957

To complete \$30 million of construction in 1957, George F. Driscoll company purchased millions of dollars worth of construction materials. These included — reinforcing steel — concrete — brick — roofing insulation — wooden forms — interior wood doors — steel window frames — hardware — kitchen cabinets — and countless other items.

President Driscoll plays BIG role in materials purchasing

Although materials for a building construction project are generally specified by the architect or engineer, in most cases the contractor can substitute materials which are approved equals of those originally specified. Fred Driscoll indicated that he personally plays an active role in specifying and purchasing the wide variety of products required for his construction projects. "In most instances," says Mr. Driscoll, "we specify and purchase by brand names. The purchase of construction materials plays an important part in our net profit picture. It is for this reason that I must keep abreast of what is available and from what sources of supply."

Driscoll Co. operates in joint venture with Moccia Construction Corp.

Approximately 55% of George F. Driscoll Co. construction is done in joint venture with Moccia Construction Corp. In 1957, \$16.5 of the \$30 million total construction put in place by Driscoll was completed with Moccia. The heavy and light construction equipment required for Driscoll-Moccia joint venture projects is owned and operated by Moccia.

\$4½ million International Hotel, New York International Airport. This 320 room, six story cantilever reinforced concrete hotel required 625 tons of reinforcing steel . . . 6,300 cubic yards of concrete . . . 800 wood piles and 80 steel pipe piles. Project started January '57 and completed April, '58.

\$14 million Senator Wagner Housing Project

A Driscoll-Moccia joint venture. 22 buildings from 7 to 16 stories; covers 27 acres; 2,162 dwelling units. Project required 300 to 600 men and the following materials:
 58,170 cu. yds. of concrete—6,502 ton reinforced steel—7,800 sq. ft. of roofing insulation—250,000 sq. yds. of plaster—44,000 sq. ft. of ceramic floor tile—1.6 mil. sq. ft. asphalt tile—140,000 sq. ft. of glass—11,316 wooden doors—12,569 kitchen cabinets—11,100 window shades—5.7 mil. sq. ft. of paint (9,475 gallons)—3.5 mil. sq. ft. wooden forms—261 flights concrete stairs—1,500 metal doors—11,316 door locks—2,185 medicine cabinets—90,000 lbs. steel lintels—\$1 million of brick work.



Moccia Construction Corp.'s \$700,000 of equipment includes:

3 Lima 802 Cranes	25 Power Grinding Machines	6 Homelite Pumps
1 P & H Crane	1 Band Saw	2" and 3"
3 Freuhof Trailers (32')	12 Skill Saws	2 Terazzo Grinders
4 Trucks (1 GM, 2 International, 1 Dodge)	10 Power Drills	3 Federal Sump Pumps
2 Willy's Jeeps	9 Insley Buckets	5 Floodlights
1 Ford Station Wagon	1 Electric Arc Welder Set	5 Kartong Stirrup Benders
1 Payloader	10 Vibro-Plus Vibrators	3 Alamo Benders
1 Caterpillar D-8	2 Electric Vibrators	3 Shears for Steel Fabrication
1 Lowbed Trailer	20 Homelite Generators	120 Aristo gas Heating Units
5 Superior 16" Blade table saws	2 Trowelling Machines	200 Salamanders
	10 4 cyl. gas Engines	



"I have subscribed to CONSTRUCTION METHODS for over 25 years because it informs me of the latest construction techniques and solutions to many problems"... says contractor Fred J. Driscoll

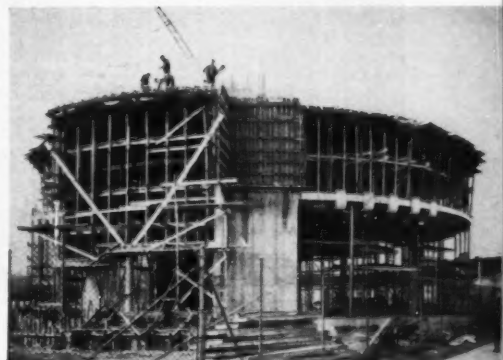
Fred J. Driscoll is typical of CONSTRUCTION METHODS' many long time loyal subscribers among presidents, owners and other responsible personnel in over 13,000 contracting firms. In fact, 46% of CM&E's 45,000 paid subscribers are in top management.

As president of a multi-million dollar yearly contracting operation, Fred Driscoll must keep abreast of important developments in the contracting business. Speaking of CONSTRUCTION METHODS Mr. Driscoll says...

"I am always looking for new methods and construction techniques. I'm interested in knowing how other contractors handle certain problems. In this way I don't become too narrow in my viewpoint on methods of work. We as contractors are more interested in "how" things are done. We look for the unusual and like to tackle the unique jobs. Nothing tells the story better than a picture ... and METHODS photo journalism technique make it a fast reading publication. It is necessary to keep abreast of what is going on in construction by reviewing the activities in our trade. METHODS fills this need."

Other buying influences in the Driscoll and Moccia Organizations who subscribe to CONSTRUCTION METHODS include 4 engineers, 1 construction supt., 1 maintenance engineer, and 1 carpenter foreman.

George F. Driscoll Co. and Moccia Construction Corp. are two of the 2,896 contractors who received over \$1 million in contract awards in 1956. 8,941 contractors received over \$100,000 in awards totaling \$14.6* billion. Contractors are the largest purchasers of construction equipment and materials.



Another Driscoll-Moccia joint venture is the \$1.5 million East New York Savings Bank, Brooklyn, New York. Project required 195 tons of reinforcing steel, 1,850 cu. yds. of concrete, 17,300 sq. ft. of plywood, 71,000 bd. ft. of forming material, 550 pieces of scaffolding planking, and various amounts and sizes of tie screws, snap ties anchor slats, etc.

Contractors are BIG business ... and influence big business with vast purchasing power. To sell contractors you have to reach them. CONSTRUCTION METHODS' circulation coverage and penetration of contracting firms offer you an effective, sure way to deliver your message to the men in construction who count most ... long-time loyal readers of CONSTRUCTION METHODS like contractor Fred J. Driscoll.

*CM&E BUSINESS NEWS DEPT.

Construction Methods

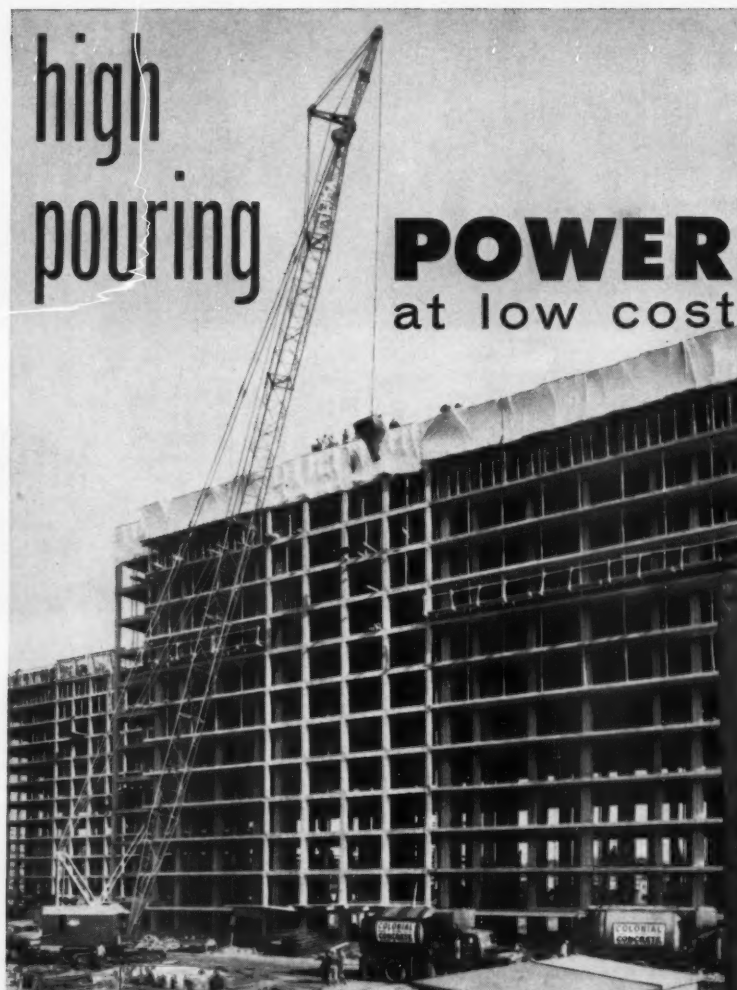
AND
EQUIPMENT



A McGraw-Hill Publication
330 W. 42nd St., New York 36

high
pouring

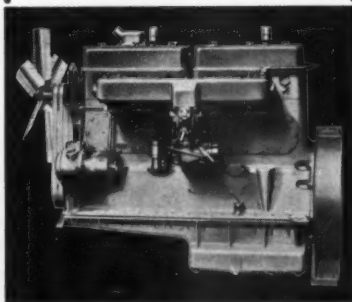
POWER
at low cost



WAUKESHA

● Concrete is moving here. And a Waukesha-powered Lima crane with a 190' boom is moving it. Using a 2-yd. concrete bucket, between one and two full floors a day are being poured, depending on truck delivery. The co-operative housing project is in Brooklyn's Sheepshead Bay area. Costaldo Construction Corp., Bronx, New York, own the unit. Its overhead valve engine—Waukesha Super-Duty WAK—is built to deliver greater power per cubic inch displacement. And it is rugged in every detail, oil pan to head. Renewable wet-type sleeve cylinders, and other "complete rebuildability" features give easy, economical maintenance. Get Bulletin 1554.

POWERING the LIMA CRANE



● Waukesha WAK Gasoline—six cyl., 6 1/4" x 6 1/2" bore & stroke, 1197 cu. in. displ. (Also in normal or turbocharged Diesel models.) ●

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

380

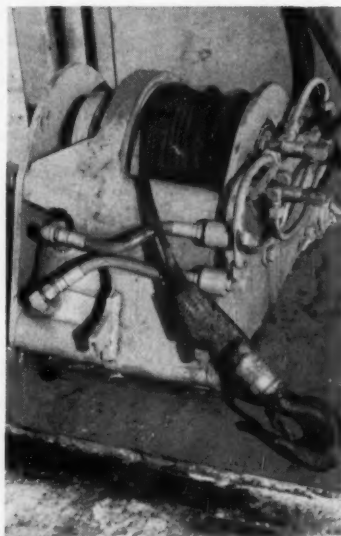
NEW YORK

TULSA

LOS ANGELES

EQUIPMENT NEWS . . . continued

air motor. Two types of throttle control are available: a manual nylon rope and pendant; or a remote control system that permits one-hand hoist operation through a two-level throttle. The hoist is available with roller or link chains and with hook or trolley mountings. Safety features include air-cooled disc brakes that automatically lock if air pressure fails.—Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill.



HYDRAULIC WINCH — Teale's new fully hydraulic winch eliminates the need for all worm, spur, or other gears—thus picks up the mechanical efficiency generally lost through such gears. The winch is powered by twin two-way hydraulic cylinders that transmit power directly to the drum drive shaft. Line speed for the winch, when it is equipped with a 15-gpm pump, can be varied smoothly from 45 fpm down to less than 1 fpm. According to the manufacturer, the winch goes slower under a full load than any other winch built. The winch can develop up to 6,000 lb of line pull on a bare drum, with positive power kept on both ingoing and outgoing lines. The unit can be driven with a pump as small as 5 gpm. If a hydraulic line should begin leaking, the winch drum stops automatically and holds the load in position. The winch is 18-in. wide, 17-in. high and 24-in. long. It weighs only 600 lb.—Teale & Co., Omaha, Neb.

continued on page 195



Engineers
Transit
Model 50

No Weather Worries with Brunson Ball Bearing Construction!

You never have to worry about operating conditions when you use a Brunson instrument. Revolutionary ball bearing construction virtually eliminates the problems of dust, moisture, and extreme temperatures. Your Brunson instrument stays accurate where others fail!

Located in the spindle and telescope axis, Brunson ball bearings are permanently lubricated by an all-temperature lubricant and sealed against moisture and dust. Preloaded and accurate to 5-millionths of an inch, these ball bearings provide highest possible instrument accuracy. Because the bearings are always fully protected and free rolling, wear is practically eliminated. Settings are more precise, frequent cleaning and lubricating are unnecessary. Routine repair and maintenance are reduced to a level never before thought possible.

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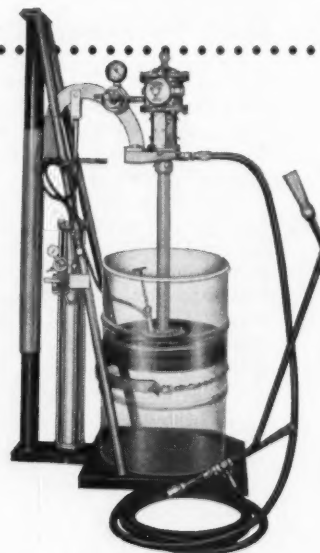
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You save time, because ready-mixed sealing compounds are applied cold, directly from original 55 gal. drums...you save materials...waste is eliminated, every ounce of material is used...you do better work...joints are sealed solid, from top to bottom, with uniform application under constant, uniform pressure. Tests prove this method is up to 75% better than the hot mix way!



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SELF-PROPELLED TAMPER — Vibro-Plus's new CM-15 tamper weighs only 242 lb but it produces a 2,300 lb impact with 2,350 vibrations per minute. The self-propelled unit can travel effectively at a rate of up to 55 fpm over such granular materials as sand, crushed stone, or gravel. Handle vibration on the CM-15 is reduced by two sets of shock absorbers. The base of the handle is mounted on one shock absorber, and the handle itself is composed of two parts—similar in design to an airplane landing shock absorber. Instead of using hydraulic fluid to absorb the shock, two opposing springs do the work. This mechanical arrangement is said to require less maintenance.—Vibro-Plus Products, Inc., Stanhope, N.J.



NEWEST PAYLOADER — The latest addition to the Hough Payloader line is the entirely new H-25, a compact rubber-tired, front-end loader with a rated carrying capacity of 2,500 lb. Features of the loader include powered steering, a new power-shift transmission and torque converter, and a power-transfer differential that automatically transfers more torque to the drive wheel with the best footing when slippage is encountered. Extremely maneuverable, the H-25 has a turning radius of only 6 ft to



always a
bigger bite

Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.



Other features that make OWEN the leading clam-shell "seller" are:

One-piece Head Construction

Riveted Bowl Construction

Single Main Shaft

Recessed Lip Design



On this our 50th Anniversary Year, The Owen Bucket Company wishes to express our appreciation for the excellent acceptance of our products and pledges to maintain in the years ahead the high quality of design, workmanship and service that has become associated with OWEN Products.



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when

the chips

are down...

when

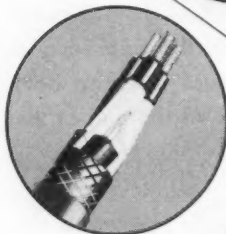
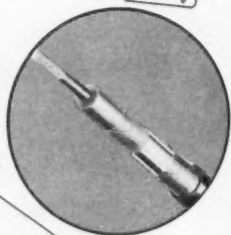
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Look to Normandy to come thru on schedule! No matter how high the voltage or large the size, the power cable and portable cord you've been looking for are ready for immediate delivery here! Choose from one of the world's largest cable stocks under one roof!

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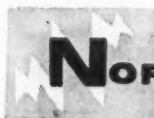
- Heat & Flame Resistant Control Cable
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on power and control cable

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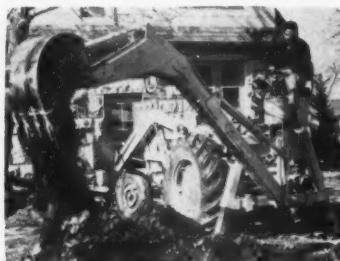


NORMANDY
ELECTRIC WIRE CORP.

125 SECOND STREET
BROOKLYN 31, N. Y. Triangle 5-9863
CABLE ADDRESS NORMWIRE, NEW YORK

EQUIPMENT NEWS... continued

the outside rear hub. The new Payloader is being offered with a choice of gasoline, diesel or LPG power. The standard 44-hp gasoline engine is equipped with wet sleeve cylinder liners and an overhead valve design to reduce maintenance. The H-25 has a breakout force of 4,500 lb, and like other Payloader models it provides a bucket tip-back of 40 deg at ground level. Maximum dumping height clearance is 5 ft 4½-in.—Frank G. Hough Co., 706 7th Ave., Libertyville, Ill.



LOW COST ATTACHMENTS—

Ottawa has introduced a new line of backhoes and front-end loaders that are priced lower than previous Ottawa attachments. The new Model LX backhoe digs to a 12½-ft depth in any position through a 190-deg arc. Outriggers, boom structure, and driving mechanisms are supported by an A-frame formed from boxed sections that are electrically welded for added strength. A turret-type seat that pivots with the boom is offset so that the operator's visibility is increased. A four-point hitch allows the backhoe to be attached to a tractor in less than 5 min. A patented feature is an ejector bucket in 14, 18, or 24-in. widths that automatically forces out wet or sticky material during the dumping cycle. The new model U loader is designed as a companion tool to the LX backhoe, but either attachment can be mounted and operated independently. When the backhoe and loader are mounted on the same tractor, the Ottawa hydraulic system operates both by providing up to 2,400 lb of load lifting capacity and 7,000 lb of digging force at the cutting edge of the backhoe bucket. One lever controls all loader actions, and two levers control all movements of the backhoe boom and bucket. The loader can be lifted from ground level to maximum dump-

TWIN FACTS



a report on the
cost-cutting performance
of Euclid "Twins"

Twins move the cheapest dirt!

An Oregon highway job involved 1,300,000 yards of excavation. Despite having to move ripped and shot rock weighing 3000 pounds per bank yard, the contractor used a spread of two Euclid 24-yard "Twins" and two 21-yard single engine scrapers push loaded by 300 h.p. crawlers. The 1800' haul followed the centerline of the new road over incomplete fills of minus 12%, plus 14%, and minus 12% grades.



Time study and weight figures for the two types of scrapers working under the same conditions show over 50% more production for the Twin-Power Scraper. Each "Twin" moved 143 bank yards per 50 minute hour while the single engine rig moved only 91 yards. This higher "Twin" production cut costs by better than six cents per yard!

For more details on this job, ask your Euclid dealer for Twin Facts No. 23... he can show you why Euclid "Twins" give you a bidding advantage.

EUCLID DIVISION, General Motors Corp., Cleveland 17, O.

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

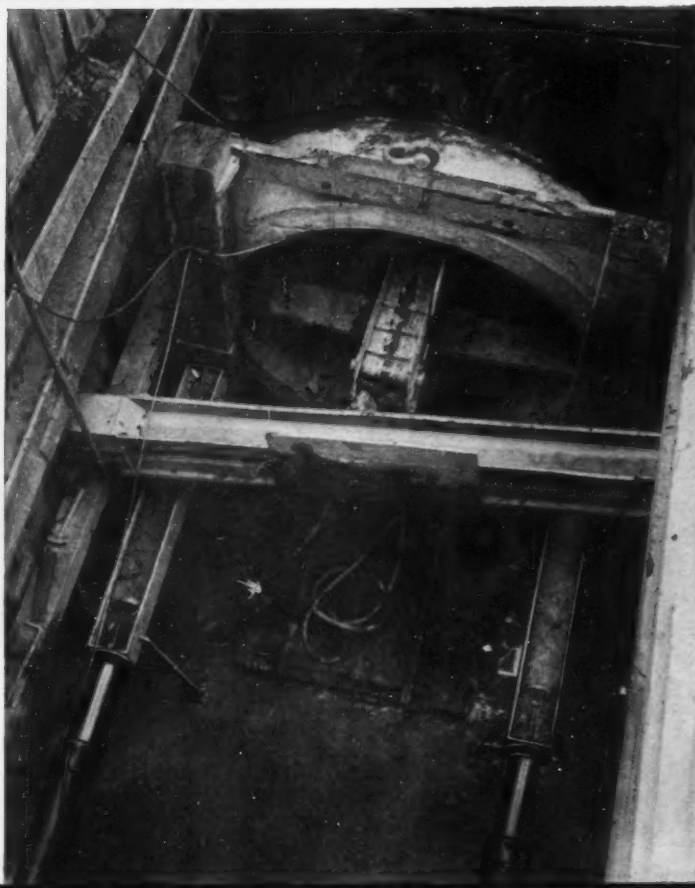
Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

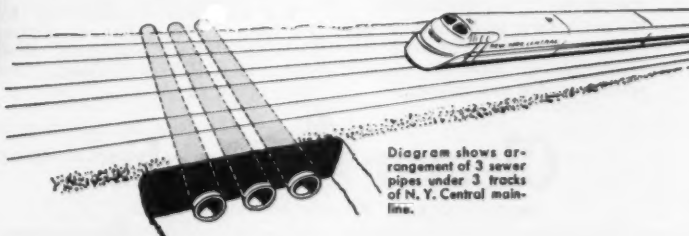
EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.



↑ Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

← Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately 1/3 of the 48" ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.



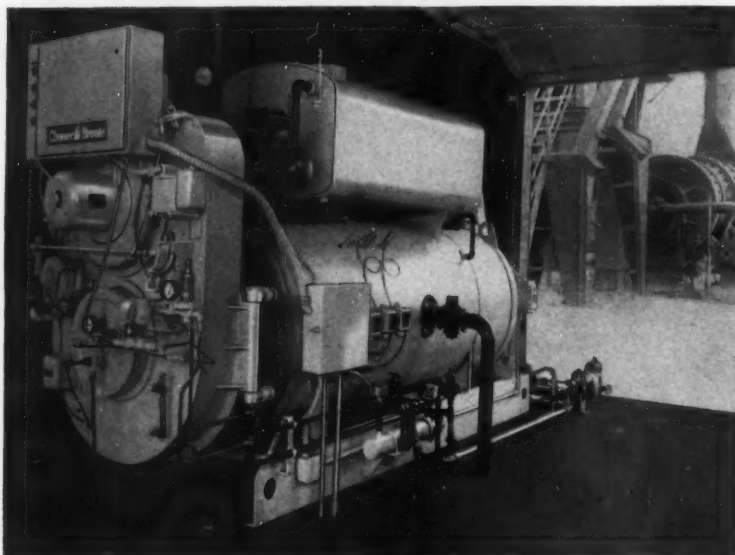
If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

7403 Walker St. • Minneapolis 26, Minnesota



New PEAK ^ TEMP forced-circulation uses high-temperature oil



Heats bitumens twice as fast as 150 lbs. steam!

New Peak-Temp forced-circulation oil heater does away with costly high pressure steam lines, valves, boilers. Heated high-flash-point oils circulate, raise and maintain bitumens and heavy viscous materials to application temperatures—increasing at the rate of 25 to 30° per hour. That's about twice as fast as with 150 lbs. of steam.

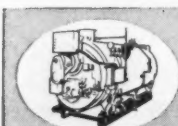
- Forced circulation provides uniform heat distribution. No carbon build-up or coking.
- Circulating oil lasts indefinitely—won't freeze in spring and fall operation.
- No refractory in furnace to replace or maintain. No stack.
- Heats oil to 450° F. without special pumps and fittings.

- Operates at atmospheric pressure—minimum attention and maintenance.
- Completely automatic—fully equipped with advanced operating and safety controls. Quiet, smokeless.

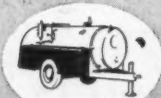
Versatile—easily adapted to heating a variety of viscous materials—such as plastics, residuals. Handy for quick drying of forms used with cast prestressed concrete structural members. Completely fiber glass insulated and metal-jacketed.

For complete details write for Bulletin C-11. Cleaver-Brooks Company, Road Machinery Division, Dept. F, 399 E. Keefe Ave., Milwaukee 12, Wis.

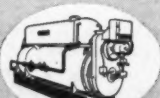
Cleaver Brooks
ORIGINATORS OF THE SELF-CONTAINED BOILER



CB BOILER—15 to 200 hp. Oil, gas and combination oil/gas-fired.



PORTABLE STEAMER—50 to 125 hp. trailer and skid-mounted.



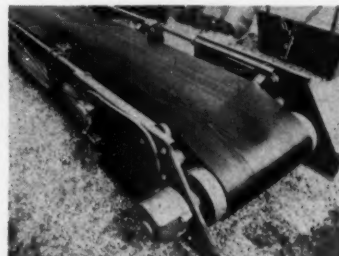
PEAK-TEMP OIL BOOSTER—Skid-mounted. Easily transported.



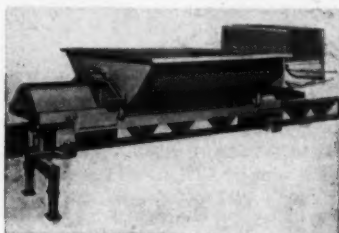
PORTABLE PUMPING BOOSTER—Has self-contained oil and gas tanks.

EQUIPMENT NEWS . . . continued

ing height in 4½ sec, dumped in 2 sec, and lowered to the ground in 3 sec. The loader and backhoe can be adapted for a wide range of wheel and crawler tractors.—**Ottawa Steel Div., Young Spring & Wire Corp., Ottawa, Kan.**



SINGLE-UNIT DRIVE—A compact conveyor drive that incorporates the motor, gears, and all other moving parts within the head pulley drum has been introduced into this country from Germany by the George von Opel Corp. Called the Bauer Self-Driven head pulley, the unit takes up little space and does away with the need for overhead V-belt drives and supporting superstructures and catwalks. Maintenance is minimized because there are no V-belts to adjust. The motor is enclosed completely and equipped with sealed bearings. Safety is another feature because there are no exposed chains or sprockets. Bauer pulleys are powered by three-phase induction motors ranging in size from .15 to 15 hp. They are available to handle all standard size belts.—**George von Opel Corp., 15 William St., New York 5, N.Y.**



BETTER RAILPORTER—An improved, heavier-duty model of the Railporter is now available from Chain Belt Co. The Railporter is a portable, self-propelled materials handler that operates over a monorail system. It makes its round trip from the supply point to its destination unattended.
continued on page 201

TRUE WHAT ARE YOUR ^ BLASTING COSTS?



**Get a complete profit picture with new,
free Blasting Cost Chart! Let the Atlas Man show you how**

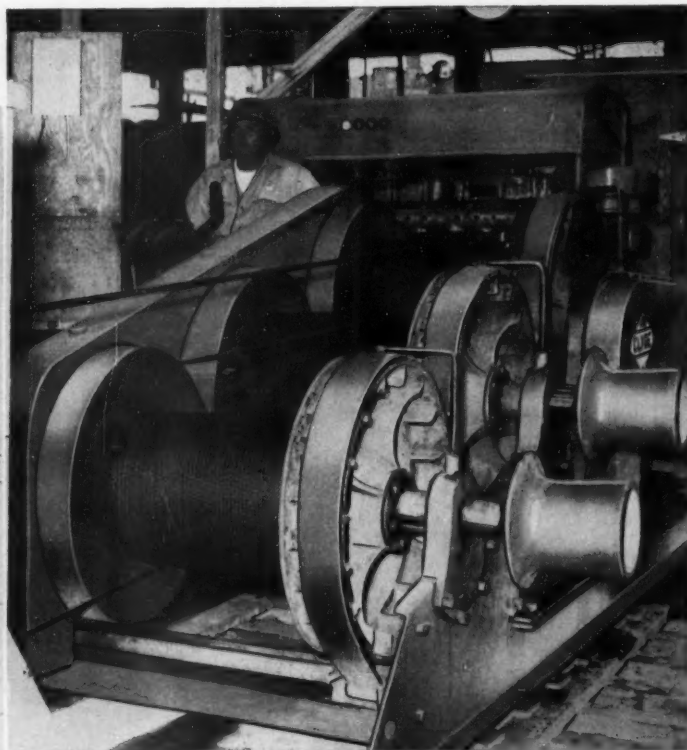
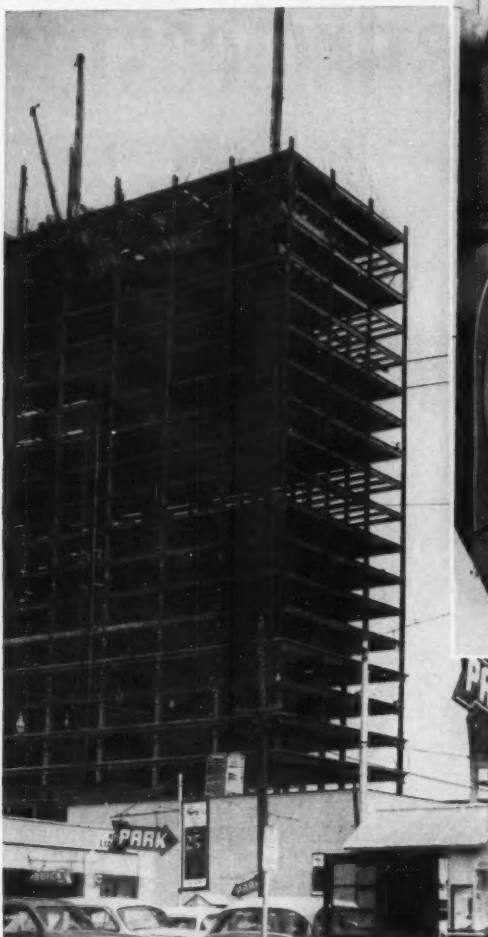
Explosives costs alone don't always determine value of a blast. The explosives used have a direct effect on drilling, digging, hauling and crushing costs. Now, a free, simplified computing method—developed by Atlas, gives you a true, complete cost analysis of profits, without involved bookkeeping.

The Atlas Blasting Cost Chart enables you to protect or improve your profits. What's more, it's yours without cost and you can keep your figures confidential. The Atlas representative nearest you will be glad to show you how it works—without obligation.



WILMINGTON 99, DELAWARE *offices in principal cities*

Operator J. L. Cartwright rates this Clyde hoist outstanding in reliability and smooth operation after two continuous years of service on Southland Center project.



Clyde Hoists speed construction on Southland Center in Dallas

IN the construction of Dallas' ultra modern Southland Center, progress is the day's main order of business. This block-size development is the site of building projects which will change the skyline of downtown Dallas.

Hub of the development is Southland Insurance Company's 42-story office building, being built by the J. W. Bateson Construction Company. A Clyde 3-drum gasoline-powered hoist is the basic materials-handling equipment credited with lifting a gigantic volume of building materials over the last two years. Cost of repairs and maintenance on the 5-year-old hoist is reported as "almost nil."

On the Southland development, as on building projects the world over, the reliability and smooth operation of Clyde hoists—gasoline, diesel or electric powered—help keep progress on schedule, cut costs and eliminate stoppage in materials-handling. These hoists employ the newest and most thoroughly practical design advantages to assure continuous, high-speed operation and long, trouble-free life . . . advantages that are illustrated and described in special bulletins available upon request. Check with Clyde. Find out why Clyde hoists are the money-wise choice for your materials-handling problem. Write for your copy of Bulletin 4-M.

*Submit your
equipment requirements to
Clyde engineering specialists
for detailed recommendations.*



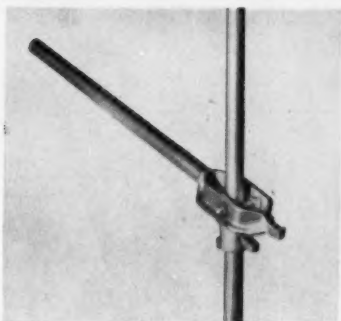
CLYDE IRON WORKS, Inc.

Established 1899

DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS
UNLOADERS : CAR PULLERS : ROLLERS

ed and then stops automatically. The new Railporter has been beefed-up considerably. Larger bearings are used in the outboard roller, double-shoe brakes have been added, a new alloy steel drive wheel is used, and stop-plugs that halt the Railporter on its tracks are now heat-treated. In addition, controls have been simplified and the engine has been enclosed in a steel housing. The Railporter can carry 20 cu ft of concrete or 3,000 lb of blocks, stone, or lumber. The 12-ft rail sections can be set-up at the rate of 450-ft of track per hr by a three-man crew.—Chain Belt Co., 4701 W. Greenfield Ave., Milwaukee 14, Wisc.



PULLS STAKES — A simplified puller for removing steel construction stakes is now offered by Symons Clamp & Mfg. Co. The puller operates similar to an automobile bumper jack. This is accomplished by inserting the hooked lever arm of the puller through a rectangular slot in the top of Symons' stakes. The unit can remove stakes as long as 36 in. It has a mechanical advantage of 7:1. Made of steel pipe, the puller weighs only 10 lbs.—Symons Clamp & Mfg. Co., 4249 W. Diversey Ave., Chicago 39, Ill.



BUCKET CHOICE—A choice of bucket types to fit varying job conditions is now offered on the



NOW, A MANGANESE STEEL ELECTRODE

with High Build-up, Low-spatter, Easy Slag Removal

A special new Amsco rod, Nicro-Mang, for both joining and buildup of manganese steel

Out of Amsco® metallurgical research has come a new welding rod that gives you high weld strength without cracking on Austenitic manganese steel. A rod that lets you lay down a bead without slag popping, and slag removal is easy.

To lick the cracking problem, it took a special alloy of chromium and nickel, plus a unique coating for Nicro-Mang.

Write for Nicro-Mang bulletin, or see your local Amsco distributor.

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.



AMSCO

American Manganese Steel Division

Chicago Heights, Illinois



with OTC's new trailer-mounted TRACKMASTER

Now the smooth-operating TRACKMASTER hydraulic track press can be put to work anywhere — on the job or in the shop. The fast, safe TRACKMASTER operation saves on track overhaul because it presses pin and bushing simultaneously with no broaching of side links! More working hours out of each set of side links! — a big saving to contractors! The TRACKMASTER'S rigid structure and heavy, rectangular ram, takes full off-center loading, makes operation safe. No worry about press breakdowns and unnecessary maintenance. Hydraulic track-indexer positions track accurately in rigid, non-movable saddle.



NEW OTC HYDRAULIC-POWERED TRACK-BOLT IMPACT WRENCH

Eliminates the need for an air compressor or an electric power source. Takes its power from the TRACKMASTER'S hydraulic takeoff. Has one-inch square drive and exerts up to 900 ft./lb. of torque. One control governs all its operations.

FOR MORE INFORMATION ON THE NEW OTC
"TRACKMASTER" ... WRITE



OWATONNA TOOL COMPANY

380 Cedar Street • Owatonna, Minnesota

model 100 Case TerraTrac crawler tractor-shovel. In addition to the standard front-hinged bucket, which gives a high dump clearance for stockpiling or truck loading, a new rear-hinged bucket for heavy-duty digging is available. Both buckets are rated at 2-yd capacity. The new rear-hinge design provides 25% more breakout force and about 600 lb of increased carrying capacity. It also is wider and shallower, and it has a steeper grading angle. Parallel skid-plates that extend from the lift arm hinges to the cutting edge are said to increase breakout and to provide an extra wear surface along the entire bottom of the bucket. The price is about 13% higher than the front-hinged bucket.—J. I. Case Co., Racine, Wis.



NEW LINE—The Master Vibrator Co. has increased their product line with the introduction of a series of one-man-operated vibratory compactors. Two sizes of the self-propelled compactors now are available. The Master C-12 is a 236-lb unit powered by a Wisconsin engine that develops 3.5 hp. It has a compacting force of 2,300 one-ton blows per min. Equipped with semi-pneumatic wheels, its forward speed ranges from 20 to 45 fpm. Available shoe sizes are 12, 18, and 24 in. An asphalt water plate that prevents asphalt from sticking to the bottom of the shoe is available. The Master C-36, which weighs 435 lb, is powered by a 4.2-hp Wisconsin engine. It delivers a compacting force of 2,300 1½-ton blows per min. and it can be



Power to trench

30 feet deep with

2½ cu. yd. bites

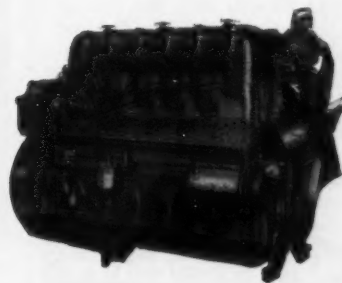


On the toughest digging and lifting jobs you'll find P&H Diesel at work making good construction equipment perform better. An engine with lots of reserve strength and high torque, the P&H Diesel maintains a high rate of production—handles peak loads without stalling.

Until Harnischfeger developed the P&H Diesel, contractors had to be satisfied with diesels which did not fully utilize all the potential of their equipment. But now, P&H Diesels have changed this situation with:

- more responsive, faster starts, better idling than any other make of diesel
- delivers more power with less fuel —uses low-cost No. 2 diesel fuel
- 25% fewer working parts and all wearing parts are interchangeable
- compact design results in easier maintenance—smaller parts stock

For all your construction equipment—including front end loaders, scrapers, hoists, crushers and other portable equipment—specify the one diesel with all the features that deliver top performance—P&H Diesel. P&H Diesel Engine Division, Crystal Lake, Illinois.



P&H DIESELS
Fastest Growing Name in Diesel Power

HOW TO HANDLE WET JOBS

#42 of a Series

FINISH 4 MONTHS AHEAD, THANKS TO WELLPOINT SYSTEM

*Project: Ada Bridge, Ada, Mich.
Contractor: Brown Brothers*



ORIGINAL Highway Department plans called for 6 cofferdams—one for each bridge pier. But Brown Brothers devised an alternate method, entailing much less time and money.

- They used a Griffin wellpoint system, in conjunction with a partial L-shaped steel-sheeted enclosure (see photo). Handling 12,000 gals per minute, the system quickly dropped and held ground water level 14 ft below the adjacent river.
- Ready-mix concrete trucks were able to roll across the site and pour concrete directly into the footing forms. Result: the job was finished 4 months ahead of schedule, beating previously anticipated Spring flood problems.
- Before paying high costs on your wet work, it will pay you, too, to investigate wellpoints. Call Griffin.

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

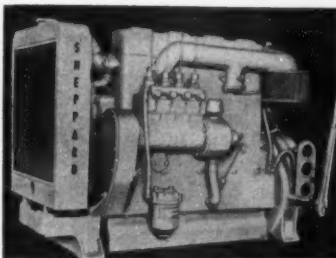
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

EQUIPMENT NEWS . . . continued

used with 24, 30 or 36-in. shoes. Both feature carburetor pumping action and an engine choke to facilitate fast starting. Protected handles reduce the amount of vibration transferred to the operator by 50%.—**Master Vibrator Co., 1752 Stanley Ave., Dayton, Ohio.**



FOR SMALL JOBS—Noble Co.'s new portable Batch-A-Bout plant permits economical job site batching on projects that are too small to warrant the use of a big concrete plant. Essentially, the unit is an aggregate weigh batcher, transfer conveyor, and sack cement loading hopper. As the need arises, the owner can add an overhead storage bin for 40 tons of aggregate, a portable aggregate bin loading conveyor, a bulk cement receiving and elevating screw with automatic batcher and compressor, and a 1,000-cu-ft cement silo. An ideal way to supply low-cost concrete to remote locations, the Batch-A-Bout can be towed by a mixer truck or pick-up truck and comply with highway regulations in all states.—**Noble Co., 1860 7th St., Oakland, Calif.**



DIESEL POWER—Two new diesel engines in the low power range have been introduced by Sheppard. The new engines are the model 17B rated at 25 hp at 2,000 rpm; and the model 19B (pictured), rated at 50 hp at 2,000

"LUBRIPLATE, THE OUNCE OF PREVENTION"



says
VULCAN IRON WORKS, INC.
of Chicago, Ill.

—a leading manufacturer
of pile driving and
extracting equipment

"For many years we have used LUBRIPLATE Lubricants for shop assembly, and have recommended them to our customers through your LUBRIPLATE Tag Plan. Our experience shows that if the proper lubricants are used from the beginning, there are fewer problems and parts replacements later. We consider LUBRIPLATE to be the best possible ounce of prevention."

H. G. Warrington, Vice-Pres.

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LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



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The A-W Hydraulic Crane... most versatile piece of equipment

according to D. R. Smalley & Sons, Inc., Celina, Ohio

D. R. Smalley & Sons, Inc., is a major Ohio road and excavating contractor. The company is now engaged in relocating a section of U. S. 40 north of Dayton. The project, entailing 1,400,000 yards of cut and fill and 20 miles of 2-lane pavement, is estimated to cost \$4,800,000.

Francis Smalley tells us: "In 1955 we decided to buy an A-W Hydraulic Crane to assist with the maintenance work on our heavy construction equip-

ment. It quickly proved its value on such jobs as changing transmissions on trucks and tractors and for lifting out and transporting engines to the shop for overhaul. It is also useful for removing crawler tracks and roller frames from tractors.

"We find many other uses, too, for this highly mobile unit. Loading and unloading materials such as barrels of fuel oil, curing compounds, and air entraining agents. In addition, we have

found it very effective for laying reinforced concrete tile of up to 24-inch diameter.

"The A-W, in our opinion, is an exceptionally handy tool—our most versatile piece of equipment. Any contractor who does his own maintenance work will find dozens of jobs for it to do."

Find out how the A-W Hydraulic Crane can help you reduce downtime and build profits. See your nearby A-W distributor or write us.

Austin-Western

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Power graders • Motor sweepers • Road rollers • Hydraulic cranes



GUARANTEED CAPACITY CROSBY-LAUGHLIN

**"LOAD
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SHACKLES
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50%

**STRONGER
than common shackles!**



Size for size, new Crosby-Laughlin* "Load Rated" Shackles are 50% stronger than common shackles! And you buy guaranteed capacities ranging from 1/4 to 75 tons with the safe working load permanently forged on every shackle.

"Load Rated" Shackles are forged from special steel that has exceptional strength and fatigue resistance. Perfect pin alignment—that distributes stresses equally over the bow—results from drilling pin holes in precision jigs after forming. Heat treated alloy steel pins and bolts in Crosby-Laughlin Shackles are always larger in diameter than the shackle body for additional safety.

Now you can demand—be positive you're getting—genuine Crosby-Laughlin "Load Rated" Fittings because they're painted bright RED. It's the quickly recognized symbol of safety and the world's most complete line of drop forged fittings for wire rope and chain.

*TRADEMARK



FREE NEW CATALOG...

lists over 2000 items... lets you order Crosby-Laughlin "Load Rated" Fittings the safe way—by capacities... includes detailed specifications and dimensional data... available now at construction and industrial equipment distributors and mill supply houses—or write direct.



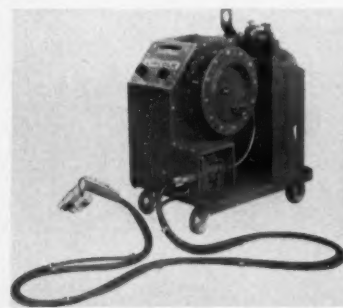
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CROSBY-LAUGHLIN Division

American Hoist and Derrick Company
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EQUIPMENT NEWS... continued

rpm. The small diesels incorporate many features found in much larger engines: replaceable wet-type liners; main bearings between each throw and at both ends of the crankshaft; full pressure lubrication including rocker arms and camshaft; oil bath air cleaner and oil-cooled pistons. Both engines have a 22-to-1 compression ratio.—Sheppard Diesels, Hanover, Pa.



MECHANIZED WELDER—Lincoln's new welding machine extends the advantages of high speed, submerged arc welding to many jobs that could not previously use the submerged arc process. Called the Lincolnweld ML-3, the machine provides automatic wire feed, flux flow, and travel speed, but it permits manual guiding of the welding arc. The unit feeds a continuous wire electrode from a coil to a hand-held gun that is placed against the welding area and propelled along at a preset speed by a small motor. A low-pressure air system flows flux from a large tank to the gun. Flux covers the arc at all times, but does not flow ahead of it. Speeds up to 70 in. per min while using up to 600 amps are possible with the unit. The operator devotes his full attention to guiding the gun, which is an L-shaped tube 1 1/2 in. in dia with a 7 1/2-in. long handle and a 5 1/2-in. long nozzle section. A small motor is mounted on the nozzle end. The feed system fluidizes the granular flux rather than blowing it. Air surrounds and suspends each grain of flux so that it always flows freely. The air flows through a dryer into a tank that stores 100 lb of flux. Except for the power source, the unit is self-contained and portable. It sells for \$950.—Lincoln Electric Co., Cleveland, Ohio.

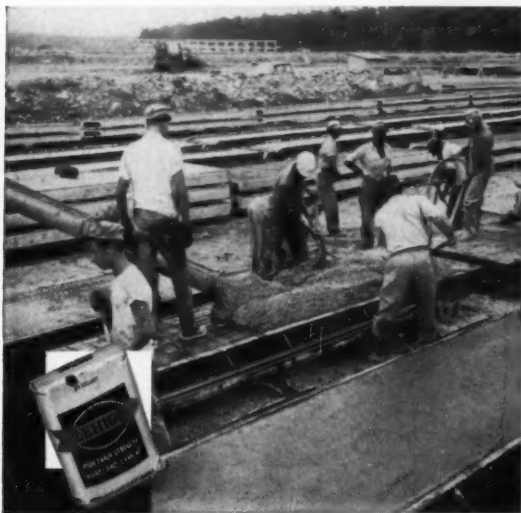
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Over 1,500,000 square feet of **PRECAST ROOF CHANNELS "GO TO MARKET"**



Only a small part of the huge Farmers Market at Forest Park, Ga., is visible in this photo of a typical farmers' shed. Altogether, the 140-acre Market comprises 32 sheds, 9 dealer buildings, an administration building, and numerous miscellaneous buildings.

Pouring precast reinforced concrete roof channels at job site. A total of 14,783 such channels—ranging in size from 4' x 20' to 4' x 46' with 8" to 16" flanges—and 15,325 tons of precast structural framing, were used in the Market.



● Almost 15,000 precast concrete roof channels went into the buildings for this new 140-acre Farmers Market near Atlanta. In addition, over 15,000 tons of precast concrete members were used in structural framing.

Precast concrete was chosen for its speed and economy in construction, its low maintenance costs, and because it gave the owners a permanent, fireproof market.

In the manufacture of the precast members, Lehigh Early Strength Cement was used to save time and money. Form costs were cut 50%, labor costs 25%, and production time by 50%.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction.

Owner: Georgia Farmers Market Authority, Atlanta, Georgia
Architect: Abreu & Robeson, Inc., Atlanta, Georgia
Engineers: T. Z. Chastain, Atlanta, Georgia
Contractor: Thompson & Street Company, Atlanta, Georgia

LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa.

● LEHIGH EARLY STRENGTH CEMENT ● LEHIGH PORTLAND CEMENT
● LEHIGH MORTAR CEMENT ● LEHIGH AIR-ENTRAINING CEMENT

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3300 LBS.
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3,300
LBS.

1/2" wire rope



PORCELAIN FORM — Miller's Curbuilder now features a porcelain vitreous enamel lining on the inside of the curb form that speeds production by providing a smoother troweling action. According to the manufacturer, the Curbuilder can now produce from 8 to 15 ft of bituminous concrete curb per min, depending on the size of the curb. The new curb forms with glass-like linings have been tapered slightly to provide better compaction. A more powerful engine also has been added to the curb extruding machine. —Miller Spreader Corp., Youngstown, Ohio

Bennett Big "G" double-action TRANSFER PUMPS

Deliver Steady, Reliable Fuel Transfer on Construction Jobs. Save Time, Money and Energy!

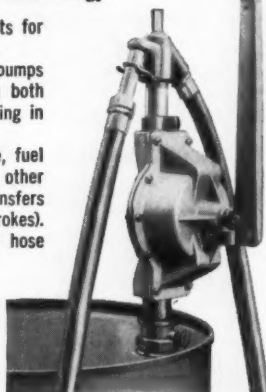
Corrosion and rust-proof working parts for long-life and dependable performance.

High vacuum, self-priming BIG "G" pumps require no foot valve—pump fluid on both forward and back strokes for a big saving in time and effort.

Fast pumping for gasoline, kerosene, fuel oils, motor oils, lubricating oils and other fluids from skid tanks and drums. Transfers 20 gallons a minute (based on 100 strokes).

Vacuum breakers provide complete hose drainage, prevent siphoning. Automotive type piston and ring design—engineered for easier operation and greater serviceability.

There's a BIG "G" model for every transfer operation. See how BIG "G" can save your time, money and energy.



JOHN WOOD COMPANY • Bennett Pump Division,
Muskegon, Michigan

IN CANADA: JOHN WOOD COMPANY LIMITED • Toronto • Montreal • Winnipeg • Vancouver

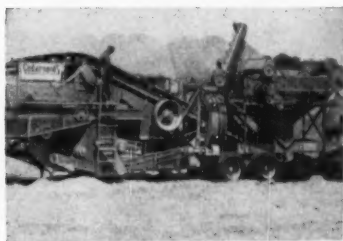


WHEEL TRACTOR LINE—Massey-Ferguson has started production of its Work Bull 1001, an integrated wheel tractor - loader featuring hydraulically actuated reversing clutches, power steering, and a five-speed transmission with a torque converter. The loader, which offers 43-deg tilt-back and 5,200 lb of breakaway power, is equipped with a 75 in. wide, 7/8-yd standard bucket. The tractor also can handle a number of other attachments including a fork lift, backhoe, angle dozer, crane, and scarifier. The 1001, which is powered by a choice of gasoline or diesel engines, is one of a line of industrial wheel tractors introduced by the new Massey-Ferguson industrial division

of Massey-Harris-Ferguson, Inc., well-known farm equipment manufacturers. Other tractors are the 40-hp Work Bull 202, the 52-hp Work Bull 303, and the Work Bull fork lift. The line also includes a full range of working attachments. — **Massey-Ferguson Industrial Div., Massey-Harris-Ferguson, Inc., 1009 South West St, Wichita, Kan.**

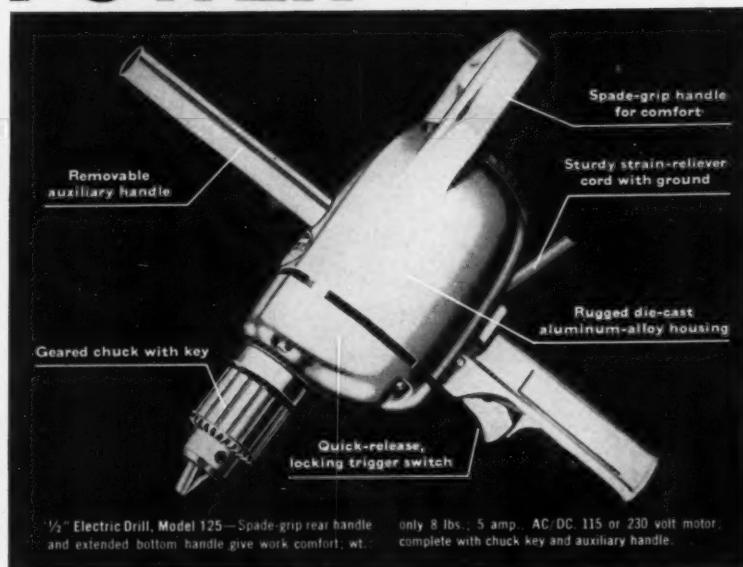


WON'T SLIP—Proto's new Klik-Stop wrench will stay in position no matter how often the jaw opening is used for a particular nut or fitting size. When the knurl is turned the jaw is locked in place until a new setting is desired. The wrench has no locking levers or buttons. Available in 4, 6, 8, 10, and 12-in. sizes, the wrenches are forged from alloy steel and then are chrome plated to resist rust.—**Proto Tool Co., Dept. JPN, 2209 Santa Fe, Los Angeles, Calif.**



EXTRA SCREENING — A new pre-screening attachment for Cedarapids portable crushing and screening plants provides two full decks of scalping area ahead of the crushing plant. The unit is designed to remove or bypass excessive fines or dirt—thus increasing the plant's versatility and production when working in

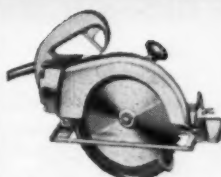
POWER to boost job efficiency with REMINGTON tools



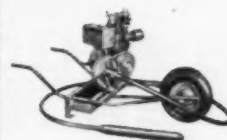
1/2" Electric Drill, Model 125—Spade-grip rear handle and extended bottom handle give work comfort, wt. only 8 lbs., 5 amp., AC/DC, 115 or 230 volt motor, complete with chuck key and auxiliary handle.



Power Trowel, Model TG4-26—2 1/2-hp, 4-cycle, gasoline-powered engine; 26" ring size; automatic recoil starter; centrifugal clutch disengages at idle.

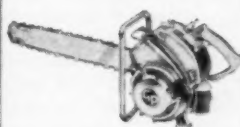


10" Electric Saw, Model 106—Rugged 13-amp, 115 or 230-volt AC/DC motor; cuts full 3 1/4". Complete with blade, wrench and carrying case.



Concrete Vibrator, Model 76V—A 5-hp, gasoline-powered unit from the industry's broadest line of air, electric and gasoline-driven models.

Powerful, rugged, easy to handle—Remington Power Tools help you boost output and ease the tough jobs. They're precision-built for long service and minimum maintenance. Your Remington distributor stocks and services the industry's widest selection of power tools and parts.



Golden "Logmaster" Chain Saw, 5-hp. Roller-Bearing nose boosts chain power up to 20%. Outcuts and outlasts other chain saws in its class.



Submersible Pump, Model PSP-602 with powerful air motor—completely submersible; pumps 14,000 gallons per hour against 10-ft. head.

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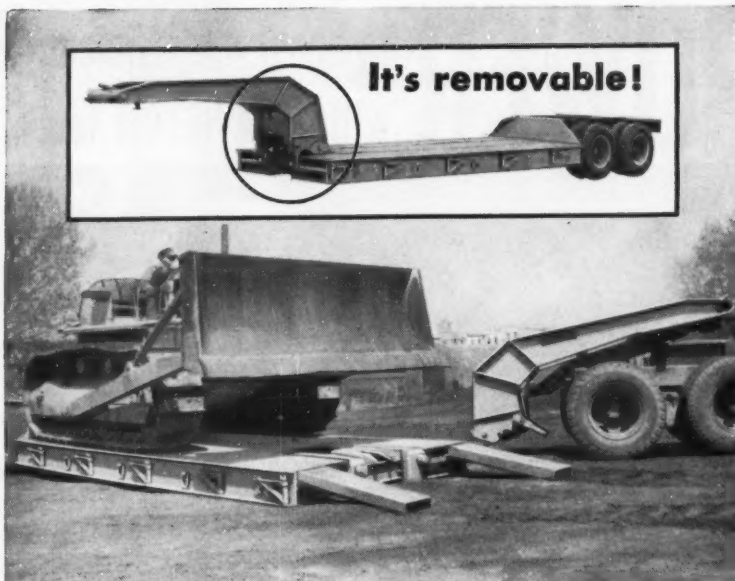


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Saves 2 to 3 hrs. on every move!

No cables!

No winch!

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Gooseneck securely
held at all times!

Here for the first time, is a really practical REMOVABLE GOOSENECK trailer, that can be loaded or unloaded over the front end in a few minutes — by ONE MAN. Time-tested fifth-wheel, king-pin connection between gooseneck and trailer simplifies alignment... eliminates need for complicated sheave and cable arrangements... and assures complete control of gooseneck, whether hooked or unhooked from trailer. Let us give you full information on this sensational LaCrosse development — 25 to 75-ton capacity — with flat, drop-side or beam-deck, "tailored" to your needs. Beats anything else on the market. Call us now!

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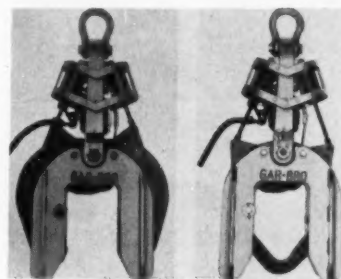
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metal
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since
1865

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... the low-bed backed by a 1-year warranty

EQUIPMENT NEWS... continued

low grade material where the percentage of fines runs high. The pre-screening attachment is interchangeable with the standard hopper and feeder of either a Cedarapids Commander or Junior Tandem plant. It consists of a double-deck horizontal vibrating screen with drives from the plant. Drive to the optional feed conveyor is also available. According to the manufacturer, the attachment, which can be installed in the field, adds 80% more screening area to a portable plant. The screen is mounted in a frame over a hopper containing a flop gate that can be arranged to take off all undersize material passing both screen decks before it reaches the crushers. It can also be used to blend any desired percentage of pit run fines with the crushed material to meet specifications.—Iowa Mfg. Co., Cedar Rapids, Iowa.



SAFETY HOOK—Gar-Bro's new trigger-actuated model B crane hook opens and closes pneumatically. Rated at 12-tons, the hook is designed for handling 2, 3, and 4-yd concrete buckets and other lifting jobs. The crane operator lowers the hook so that the mechanical trigger within the hook circle contacts the bucket bail. This actuates the ratchet-type air valve that controls the hook. Overlapping lifting tongs, which prevent the hook from opening under any load, provide an important safety factor. Built-in guide arms assure easy hooking.—Gar-Bro Mfg. Co., 2415 E. Washington Blvd., Los Angeles, Calif.

ADDS POWER — Naturally aspirated diesel engines in the 80-130-hp class can be economically boosted into the power range of engines much larger with the addition of the latest AiResearch turbocharger model. Called the T-7 turbocharger, the unit weighs

S A F E T Y

IS STANDARD EQUIPMENT

with **TROJAN** REVERSE CURVE SAFETY ARMS



REVERSE CURVE SAFETY ARMS — found only on TROJAN tractor-shovels — permit the operator to concentrate on getting the maximum performance from his machine. They enable him to do more work with less worry and handle every phase of the digging-loading cycle at maximum speed . . . At the same time, REVERSE CURVE SAFETY ARMS do not in any way obstruct vision as they never pass the operator's position. The low reverse curve arm provides forward thrust in a low, horizontal position straight to the bucket. This results in faster loading because of the increased utilization of the forward thrust force.

Other important safety features such as LOW LOAD CARRYING POSITION — INDEPENDENT BUCKET ACTION — AUTOMATIC NEUTRAL RETURN — help to reduce operator fatigue and increase production. A TROJAN will handle your jobs faster and more profitably. We'll gladly demonstrate any place — any time!



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YALE & TOWNE

TRACTOR SHOVELS

2 & 4 Wheel Drive Front-End Loaders

CONTRACTORS MACHINERY DIV., THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK; SAN LEANDRO, CALIFORNIA

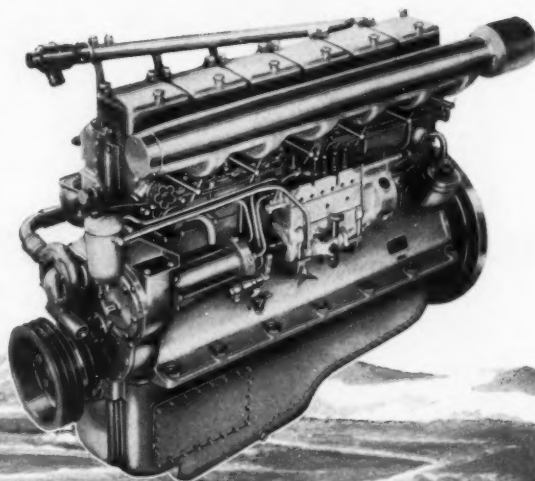
**Modern As The Highways
They Help To Build!**



MERCEDES-BENZ

DIESEL ENGINES

Today's modern construction machines are high-performance products in which the power plant is the most vital part. Mercedes-Benz diesels are compact for easy installation and service — dependable for long, trouble-free operation. The time-proven, world famous Mercedes-Benz diesel engine is quality in every detail — in its 4-stroke principle, pre-chamber combustion process, smokeless combustion and its effortless performance and ultra-dependability when subjected to severe load changes . . . Engines are available in ratings from 36 to 1385 h. p. to power everything from the smallest auxiliary to the largest earthmover.



MODEL 846 A

244 h.p. at 1500 r.p.m.

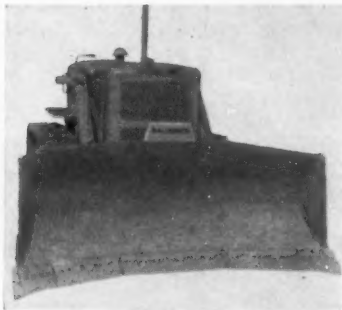
Other Mercedes-Benz diesels available in 12 and 20 cylinders, Turbo and Super-charged, up to 3000 h.p.



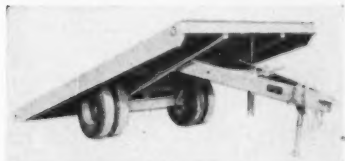
UTICA DIVISION
CURTISS-WRIGHT

CORPORATION • UTICA, MICHIGAN

only 24 lb and measures 8½ in. both in diameter and length. It feeds 15 to 30 lb of air per min into diesel engine cylinders under normal conditions. Because the turbocharger is air cooled, no complicated plumbing is needed for installation. In addition to increasing horsepower ratings at sea level and high altitudes, turbochargers also lower specific fuel consumption, provide cooler operating and cleaner burning engine conditions, and eliminate a good deal of noise and exhaust smoke. — **Garrett Corp., 9851 Sepulveda Blvd., Los Angeles 45, Calif.**



U-BLADE FOR D7—A U-shaped Balderson bulldozer blade for the D-7 crawler tractor is now available from Caterpillar dealers. The 10 2/3-ft long blade has two side sections angling at 25 deg to the straight center section. The design enables the blade to hold big loads when the tractor is required to make long passes. The blade also increases track life because tracks run cleaner when material is pushed to the center of the blade. The blade mounts on Cat No. 7S push beams and braces. It is available with either cable or hydraulic controls. — **Balderson, Inc., Wamego, Kan.**



NO PRICE INCREASE — Miller has replaced its "B" series of Tilt-Top equipment trailers with a much heavier "J" series without increasing prices. Designed for transporting crawlers, front-end loaders or rollers, the new trailers feature 10-in. deep side

New Way To Finish CONCRETE CEILINGS

More and more building specifications require finely finished concrete ceilings. Because of this new requirement, Stow Manufacturing Company has developed the Stow CG Ceiling Grinder—a special machine designed to grind off form marks and fins, cut off nails, and smooth the entire surface.

With this machine, one man can average 4,000 square feet per day. Simple to operate, it pushes along like a baby carriage.

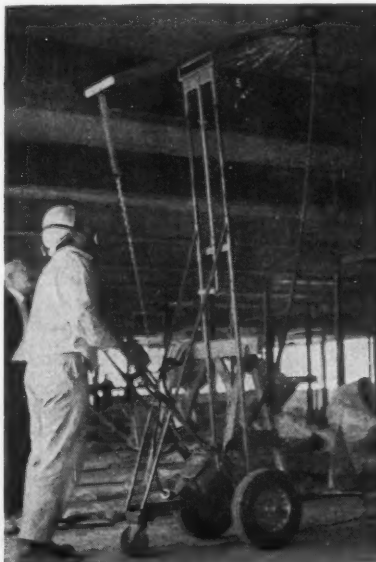
To operate the Stow Ceiling Grinder: (A) The operator first sets the pivot arm at about a 45° angle. He then adjusts the grinding disc to proper height by lifting up on the rubber-gripped handle in the center. A ratchet arrangement automatically locks it in position at the height desired. (B) A slight pressure is exerted on the grinding disc by the spring and chain assembly at the opposite end of the pivot arm. (C) A turn-buckle is used to get the most desirable angle for grinding. For ordinary grinding, the disc should be flat against the ceiling, but for cutting nails and removing fins it works better at a slight angle. A spring arrangement is built into the bearing housing to support the grinding disc and absorb any shocks, thus preventing any gouging. Once the machine is adjusted, the operator just pushes it along.

THREE MODELS ARE AVAILABLE:

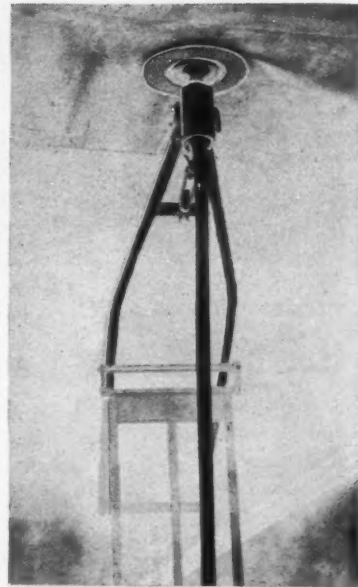
CG 10—FOR CEILINGS 8 TO 10 FT. HIGH

CG 13—FOR CEILINGS 10 TO 13 FT. HIGH

CG 16—FOR CEILINGS 13 TO 16 FT. HIGH



STOW CG CEILING GRINDER



FOG OF CONCRETE DUST

All three models have a 1 HP totally enclosed motor operating at 3450 RPM. The disc is a 9" Bayflex of cotton fibrous material with a silicon carbide abrasive bonded with resin.

The Stow CG Ceiling Grinder can also be used for grinding walls. For this type work, employ the same flexible shaft as used on the ceilings, but attach a handpiece or anglehead to one end.

Stow Manufacturing Company also makes a complete line of portable electric flexible shaft grinders for both wet rubbing and dry grinding walls. For more information on the Stow CG Ceiling Grinder and a copy of Stow's Grinding Concrete pamphlet, which gives the proper speeds for both wet rubbing and dry grinding, contact your Stow distributor or send in the coupon below. Stow Manufacturing Company, Binghamton, N. Y., also makes a complete line of concrete vibrators, rotary trowels and screeds.

STOW MANUFACTURING CO.
31 Shear St., Binghamton, N. Y.

Please send me Bulletin 5713 on CG Ceiling Grinders.

Name Title

Company

Street

City State



This compact Jaeger Model 2PN, pumps all the water a 2" suction hose can handle. With 2½" suction hose it pumps more than 14,000 gph.

Now handle more water with Jaeger pumps

Today's Jaeger Sure Prime pumps deliver performance never before offered—and at slower, long-life operating speeds. For example, a Jaeger 6PH can handle 100,000 gph as a dewatering pump or deliver 975 gpm at 60 psi pressure for well point jetting or gravel washing. Base your pump buying on latest information. See your Jaeger distributor or send for catalog.

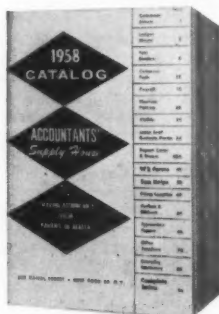
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Bulletin 412A gives complete details on the many outstanding features that make Wright Safeways your best buy for long, trouble-free life. Write York, Pa. for your copy.

Some Safeway Features

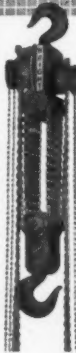
Load Chain is finest alloy, every foot proof-tested...heat treated for hard wear-resistant working surface...ductile to withstand shock loads..."wick" lubricated...anti-rust zinc coat.

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Gears, Pinions, Drive Spindle (also top and bottom Hooks) are nickel-chrome-molybdenum alloy steel mounted on heavy-duty, antifriction bearings. **Gear Train** is enclosed in oil-tight chamber.

Load Brake is Weston type, silent, dependable.

Steel Housing fully protects vulnerable parts.

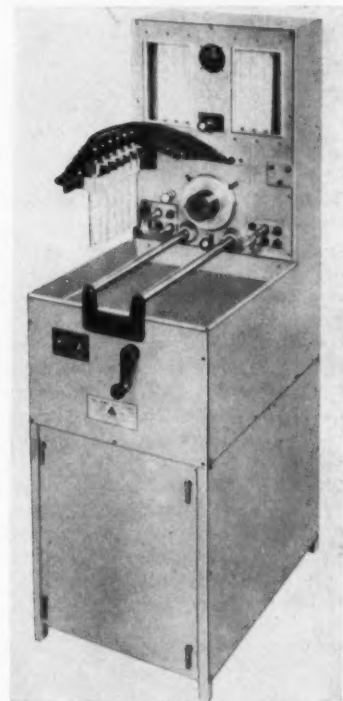


Wright Hoist Division
AMERICAN CHAIN & CABLE

York, Pa., Bridgeport, Conn.

EQUIPMENT NEWS... continued

channels that are built to take heavy strains imposed along the edges of the trailers by wide-tracked rigs. The over-the-wheel trailers are available in 6, 8, or 10-ton capacities, all with 2-in. solid oak platforms. The 10-ton model, pictured, sells for \$1,250, fob Milwaukee plus Federal tax. The standard platform size is 8x14 ft, but 8x16-ft and 8x18-ft platforms are available. The trailers have heavy-duty H-beam axles with solid steel stub inserts that supply extra strength when traveling over rough terrain. Miller has also introduced a 4-ton model H general utility trailer with a 8x14 1/6-ft oak platform. Optional equipment available for both types includes hydraulic tilt controls, electric brakes, lights, and safety chains.—**Miller Tilt-Top Co., 430 S. 92nd St., Milwaukee 14, Wis.**



CHECKS INJECTORS—The SP-600 calibrating stand will service American Bosch, John Deere, International Harvester and other similar types of fuel injection pumps used in diesel engines. The stand is designed for calibrating diesel fuel pumps and for setting governors in accordance with factory-recommended testing procedures. Features of the calibrating stand include a 1-hp, 110-220-v,



"YOU CAN SEE what you're doing—that's why American is best for Backhoe work," says operator Dennett Leary of Verona, Wisconsin. Ground that was frozen rock hard gave this 200 Series Backhoe a real workout.

Here's the start of a 10 by 30 by 6 foot deep excavation for the new building's elevator shaft. Imhoff also has a crane boom and jib front to take advantage of the American's all 'round versatility.

OLD CONCRETE, FROZEN GROUND TESTS BACKHOE'S RUGGEDNESS

Before Jim Imhoff Construction Company could start work on a new 3-story building in downtown Madison, Wisconsin, old, reinforced concrete floors and footings—some three feet thick—had to be torn out. When new footing excavations started, the frozen ground was just as hard as concrete!

To help remove and load out the debris—to dig the new footings—Imhoff put its rugged American 200 Series Backhoe on the job. The American's fast cycling, long reach and clean dumping speeded the loading of trucks. Job superintendent, Carl Solberg reported, "The American worked real good . . . filled trucks fast and kept going in tough digging."

The new building—144 by 90 feet—has footings 8 feet wide dug 7 feet below basement grade. Struc-

tural steel will be used above the foundation.

Imhoff's crane operator, Dennett Leary, says, "I really like the American's responsive controls and the brakes hold her 'right there' for deep digging." Even in temperatures down to 14° below Leary reported "no major trouble" with the machine.

You expect your cranes or excavators to give you dependable, trouble-free production on every job—and *that's exactly* what you get from Americans! Their performance has been proved on jobs of every type right across the country. Ask owners and operators how they like Americans—what American is doing for their profit picture! For facts on this complete line of crawler and truck cranes and excavators call your American Distributor, soon.

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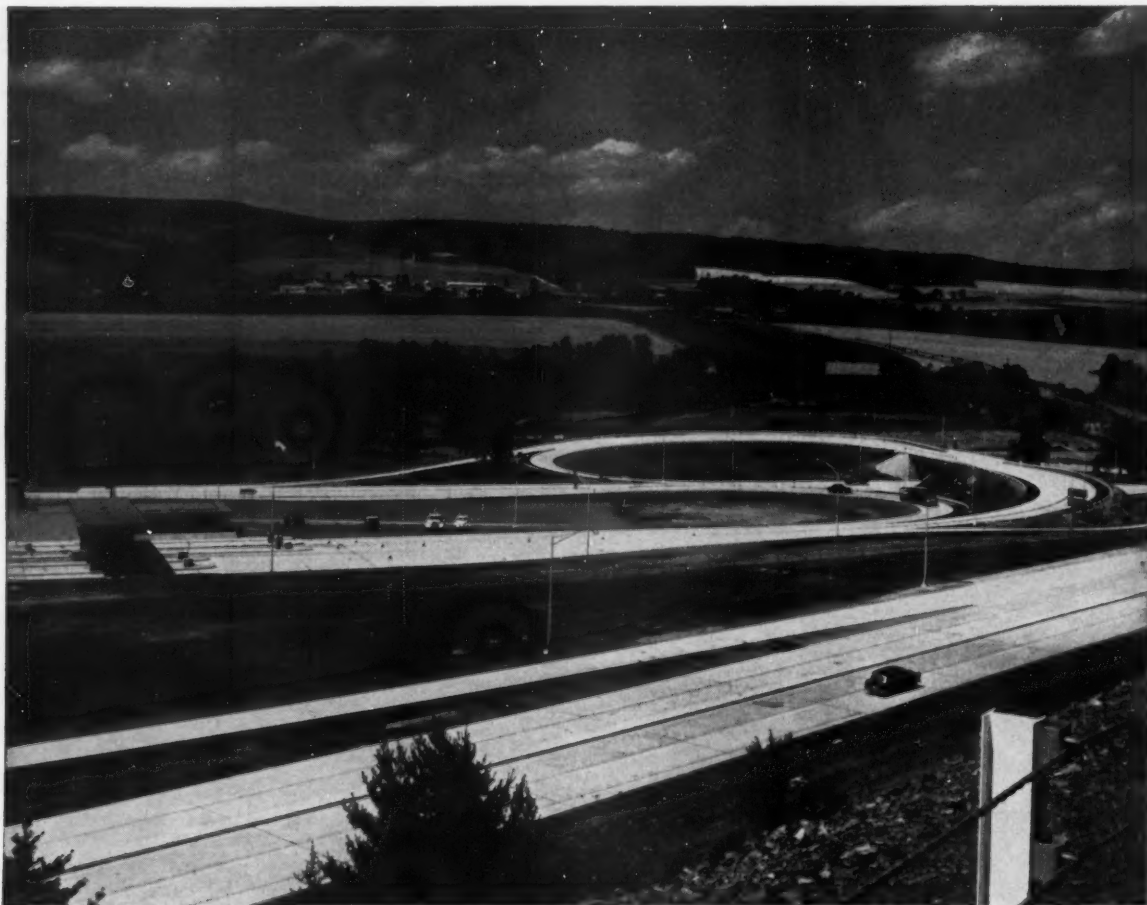
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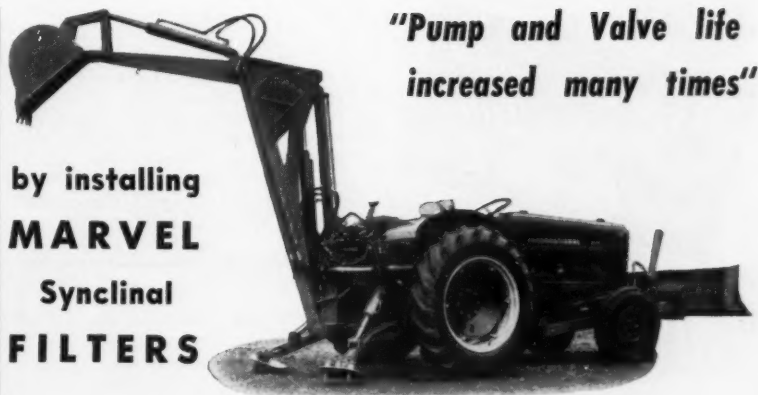
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single-phase, 60-cycle ac motor; a variable-speed transmission that provides forward or reverse rotation controlled from the front of the stand; a fuel accumulator rack that can be positioned at either side of the stand to facilitate servicing of right or left-handed pumps; and an automatic stroke counter that records up to 500 pump strokes. A full set of accessories to fit various makes of fuel injectors is available from the manufacturer. — **Bacharach Industrial Instrument Co., 200 N. Braddock Ave., Pittsburgh 8, Penn.**



PUMPS BOTH WAYS — Tokheim's 1100 series piston hand pump, which has been available only to the military, has now been released for general use. The pump has a capacity of 30 gal per min and it will pump on both forward and back strokes. It is particularly well suited for servicing heavy earthmoving equipment in the field. Features of the pump include a double-acting piston with heavy leather cups back-to-back to assure positive seal; spring-loaded stainless steel poppet-type valves and seats; a heavy aluminum housing; removable strainer screen; and a reversible handle that permits either vertical or horizontal mountings. The self-priming pump, which is capable of a vertical lift of up to 30 ft, is available in four models, including hose and spout types and one model with an automatic shut-off nozzle. — **Tokheim Corp., Fort Wayne, Indiana.**

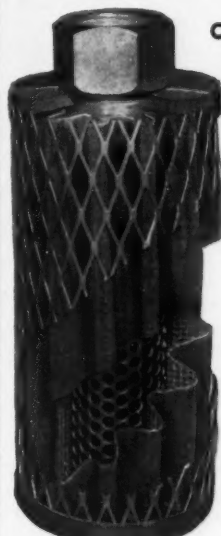


by installing MARVEL Synclinal FILTERS

**"Pump and Valve life
increased many times"**

PIPPIN Excavator and PIPPIN Angling Bulldozer

Pippin Construction Equipment, Inc. (Manufacturers) White River Junction, Vt. advise that— "Originally the PIPPIN Excavator was not equipped with a filter. Due to this, excessive pump, valve and cylinder wear was experienced. Since installing the Marvel Synclinal Filter, pump and valve life has been increased many times. Of utmost importance is the fact that customers are better satisfied and maintenance has been reduced to a minimum."



SUMP TYPE
(cutaway)

**OVER 800 other Original Equipment Manufacturers
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as Standard Equipment!**

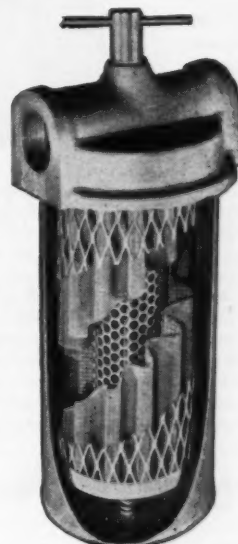
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Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of Monel mesh sizes range from coarse 30 to fine 200.

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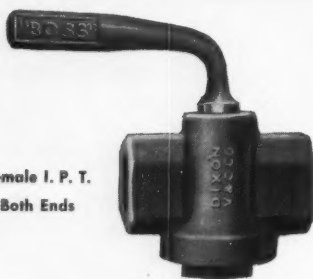
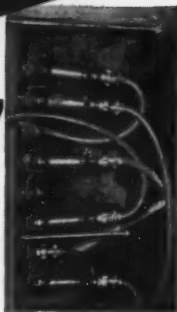
Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated—

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- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
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DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies
Buck Iron Company, Inc., Quarryville, Pa. • Precision Brass Steel Company, Chicago, N.Y.

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

Hand Tools—"How to Use Hand Tools" is a 40-p revised and enlarged edition of a booklet offered several years ago that has had wide distribution among small tool users. Price 10¢.—**Crescent Tool Company, Jamestown, New York.**

Truck Laws—The 1958 pocket edition of "Truck and Trailer Size and Weight Restrictions" compiles laws on this subject for all 48 states. Prepared by Four Wheel Drive Auto Co., the booklet contains data that has been checked by all the states and likely will be valid until mid-1959.—**Public Relations Department, Four Wheel Drive Auto Co, Clintonville, Wis.**

Tire Care—Two booklets by B. F. Goodrich contain a great deal of information on how to get the best service from tires. The complete line of B. F. Goodrich tires is also covered. The booklets are: "Highway Truck Tire Data Book," 42-p; and "Off-The-Road Tires Handbook," 52-p.—**Public Relations Department, B. F. Goodrich Tire Co., Akron, Ohio.**

Clearing Blade—A 6-p booklet describes a blade attachment for tractors that is designed to shear large and small trees, remove roots, and windrow the debris. It also serves as a regular blade for roadbuilding and ditching. Rome K/G Clearing Blade booklet.—**Rome Plow Co., Cedartown, Ga.**

Handling Equipment—Massey-Ferguson Industrial Division has issued a 28-p catalog of their light and medium materials handling equipment. Included are Work Bull and Davis models of tractors, loaders, backhoes, forklifts, and specialized attachments.—**Massey-Ferguson Industrial Division, 1009 South West St., Wichita 13N, Kansas.**

Specialty Steel—"Specialty Steels for the Heavy Construction and

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Ronald Weaver, Dansville, Mich., has owned and operated a Lima Austin-Western 111 Crushing and Screening Plant since January, 1953. With his 4-man crew, he works all year 'round, producing specification material meeting county and State requirements.

Mr. Weaver says: "I have owned and operated other plants, and I am convinced that over a period of time a Lima Austin-Western will outlast and outproduce other comparable machines. I depend on this plant to show a reasonable profit, and it has produced all that can be expected.

"It is truly a portable machine. Not long ago I moved the 111, power plant, feeder, two dump trucks,

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"The quality of the equipment is shown by the fact that it has never required a major overhaul since it went into operation 5 years ago. But the most obvious reason for buying and using Lima-Austin-Western is the fine relationship and cooperation between not only the dealer and the operator, but more important, the manufacturer, the dealer and the operator."

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NEW PUBLICATIONS...

continued

Mining Industry" describes how special steels can be applied in particular functions in construction to improve efficiency. A bibliography of other literature on the subject is included.—**Crucible Steel Company of America, Oliver Bldg., Pittsburgh 22, Pa.**

Safety Council—The National Safety Council has published several new books designed to promote safety in industry. "Rules for Safety" is a 40-p booklet giving safety rules for using power tools, stacking material, lifting and carrying. "Five Minute Safety Talks for Foremen" is a compilation of talks in earlier books of that series. Two 48-p volumes cover "Safety Devices and Ideas." "Data Sheets" are organized by industry groups and give answers to specific problems. For costs and brochures describing these books write — **National Safety Council 425 N. Michigan Ave., Chicago 11, Ill.**

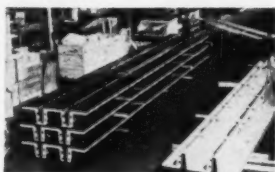
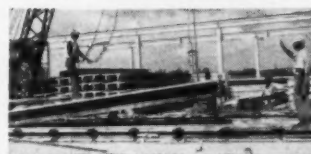
Boring & Tunneling—A new booklet describes the services offered by the Boring and Tunneling Co. of America ("BorTun-Co"). The company works with contractors on specialized jobs of road boring for utilities, tunneling, pipejacking, multiplate installations, and cross-country pipelines. Ask for the brochure "Road Boring and Tunneling."—**BorTunCo, P. O. Box 14214, Houston, Tex.**

Soil Stabilization—A 36-p booklet, "ABC's of Soil-Cement Stabilization" gives a general outline of soil stabilization along with details of methods of using the process. It describes the complete line of Pettibone Wood stabilization equipment and how to apply these machines.—**Pettibone Muliken Corp., 4700 West Division St., Chicago 51, Ill.**

Welding Safety—A new 49-p manual is a complete revision of the AWS-ASA Z 49 standard on welding safety. Entitled "Safety in Welding and Cutting," it covers fire prevention, health and protection of personnel, and handling of fuel gas and oxygen cylinders. Price \$2.—**American Welding Society, 33 West 39th St., New York 18, N. Y.**

continued on next page

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From forming to final assembly FORM-CRETE units are precision manufactured. During assembly special engineered jigs hold parts in true, straight alignment. Finished forms are inspected, checked and then carefully packed for fast delivery to your plant.

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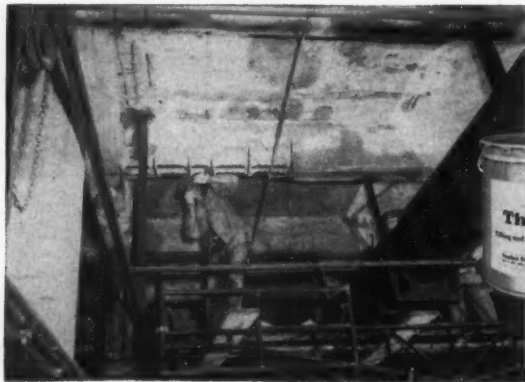
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NEW PUBLICATIONS...

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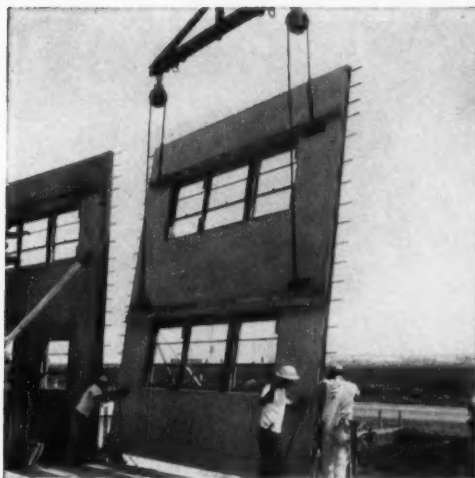
Asphalt Plant Maintenance—Saverite Engineering Co. has published a bulletin on maintenance of the combustion chambers of aggregate driers. The bulletin covers refractory coatings, high temperature patching mortars, proper bricklaying, and combustion control.—**Saverite Engineering Co., 158 - 14th St., Hoboken, N. J.**

A.E.D. Directory—The Associated Equipment Distributors have issued their 1958 Industry Directory. The 382-p volume contains company names, addresses, key personnel and phone numbers for over 2,000 firms in the construction equipment industry. The directory is divided into four sections; distributors, manufacturers, products, and trade names. Price \$20.—**Associated Equipment Distributors, 30 East Cedar St., Chicago 11, Ill.**

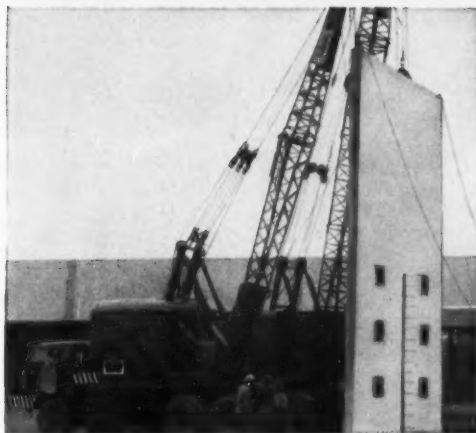
Small Jobs—"Your Share in the Small Watershed Program" points out the potential for earthmoving contractors in the Watershed program just getting underway. Some of the projects are big but many small ones offer good opportunities for a contractor with limited equipment to grow. Form D809. — **Advertising Division, Caterpillar Tractor Co., Peoria, Ill.**

Fire Prevention—A 22-p booklet entitled "Building Loss Possibilities from Fire and Natural Hazards" discusses causes of such losses and tells how to provide safeguards against them.—**National Board of Fire Underwriters, Engineering Department, 85 John St., New York 38, N. Y.**

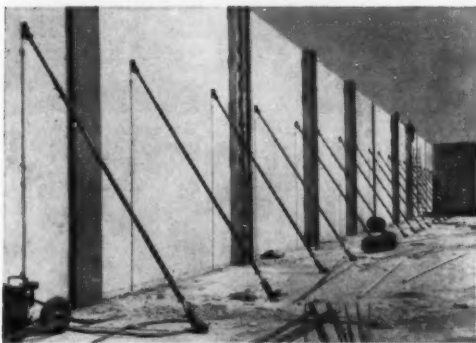
Crane Association — Since its founding in 1945 the Power Crane and Shovel Association has issued a series of bulletins on excavating equipment. Some of the more popular ones are: strip slide film and bulletin on crane and shovel design; an operating cost guide; an operators manual entitled "125 Ways to Better Power Shovel-Crane Operation." For details on association publications and to obtain these booklets write —**Power Crane and Shovel Association, 75 West Street, New York 6, N. Y.**



PANEL with large window areas



57 TON SLAB being positioned



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WAREHOUSE

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When an outstanding Tilt-Up job rates an article in a construction publication you can be almost certain that SUPERIOR products were used. The reason is simple. SUPERIOR, as the pioneer in this field, developed designs that were thoroughly tested both in the laboratory and the field to assure safety with economical prices and low application costs.

These "Pick-Up" Inserts, Brace Anchors, and Adjustable Braces have been used and proven on literally thousands of projects, not a few of which were unique in design. With a background of such experience, the recommendation of our engineers as to location and types of Inserts and Anchors is reliable and valuable.

Avoid expensive crane delays, be assured of safety, and reduce your overall costs with these SUPERIOR products.

For further details request a copy of Bulletin TU-3

SUPERIOR

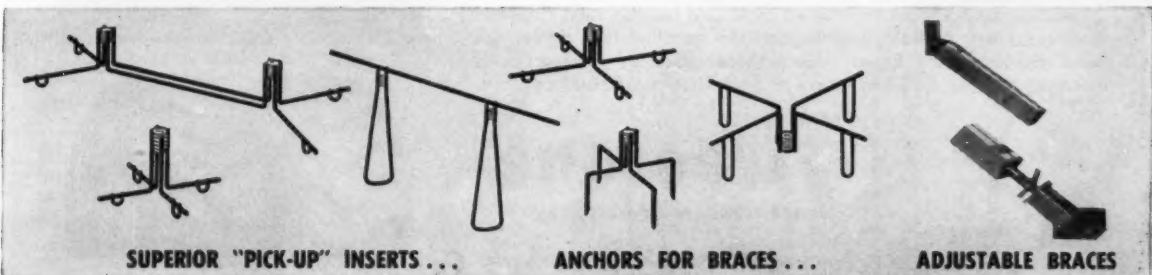
CONCRETE ACCESSORIES, INC.

9301 King St. Franklin Park, Ill.

(A Suburb of Chicago)

New York Office
1775 Broadway
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Pacific Coast Plant
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BIG PROJECTS PROVE IT!

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From the Texas Turnpike to the Niagara Thruway, Firestone Rock Grip Tires with S/F (safety-fortified) Nylon are reducing breakdown losses, cutting tire costs. Tough Firestone cord bodies withstand severest punishment to last longer with less downtime than any other tire! Two great non-directional tread designs adapt these off-the-highway tires to any job condition and eliminate excessive spare tire inventories. You get the *floatation and traction* you need in loose earth and wet going. With the same tire you get S/F Nylon's armored protection for hauls over splintered shale and blasted rock. Firestone tires resist cuts and slugging impacts like no other tires made. Ask your Firestone Tire Expert about these *tubed or tubeless* extra heavy-duty tires. Call him today at your Firestone Dealer or Store.



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ROCK GRIP WIDE BASE ROCK GRIP

The Maintenance Shop...



EASY TO DO—Hydroflation is a simple procedure, but it requires special equipment. Above, Tuxco electric pump transfers calcium chloride-water solution to scraper tire.

Hydroflation Adds Weight Boosts Pull

THE CHEAPEST and most effective way to add weight—and traction—to rubber-tired earth-moving equipment is to replace most of the air in tires with a water solution.

This process, called hydroflation, immediately increases the weight of a big rubber-tired tractor or scraper by as much as four tons. It increases draw-bar pull by as much as 25%; it lowers the center of gravity by putting additional weight on the ground; and it reduces bounce and wheel slippage.

How does hydroflation affect tire wear? Tire and equipment manufacturers still are conducting tests to gage the effect of increased internal tire stresses caused by liquid filling, but in some ways hydroflation actually cuts tire wear. Reduced wheel slippage, for instance, means reduced tread wear. And because water does not seep through tubes or tire walls as easily as air, liquid-filled tires maintain a more constant pressure range and require fewer inflation checks.

Hydroflation is a simple procedure, but it does require special equipment ranging from corrosion-proof gages to special pumps. This equipment is readily available from tire dealers or equipment distributors.

Although farm tractors and mine equipment tires frequently are 100% filled with a water solution, most equipment manufacturers insist that construction tires never should be more than 75% filled with liquid. This is especially true of load carrying vehicles or equipment that operates at high speeds.

Filling tires to only 75% of capacity with liquid also has an-

How 75% Liquid Filling Increases Tire Weight

Tire Size	Gallons Water	3½ lbs. Calcium Chloride per Gal. Water			5 lbs. Calcium Chloride per Gal. Water		
		Gal Water	Lb CaCl ₂	Total Wt	Gal Water	Lb CaCl ₂	Total Wt
8.25-20	11	9	33	112	9	44	118
9.00-20	15	13	45	152	12	60	161
10.00-20	19	16	58	193	15	77	204
11.00-20	20	17	60	203	16	80	215
12.00-20	27	23	82	275	22	109	290
12.00-24	30	26	91	264	24	121	322
13.00-24	37	32	112	376	30	149	398
14.00-20	41	35	124	417	33	165	441
14.00-24	44	38	134	448	35	177	473
16.00-20	49	42	149	499	39	197	527
16.00-24	64	55	194	650	52	258	689
18.00-25	83	71	252	845	67	334	892
21.00-25	123	105	372	1250	99	496	1322
21.00-29	158	135	480	1610	127	637	1700
24.00-25	152	130	461	1549	123	612	1635
24.00-29	177	152	537	1800	143	714	1905
27.00-33	350	300	1060	3561	282	1411	3765
30.00-33	380	325	1151	3870	306	1531	4085
23.5-25	113	97	342	1147	78	456	1103
26.5-25	165	143	500	1678	133	665	1774
29.5-25	210	189	636	1817	169	846	2257
29.5-29	235	203	712	2033	189	947	2526
33.5-33	353	305	1070	3055	285	1423	3795

EXTRA EXTRA

BBC

BALANCED BELT CONSTRUCTION

PLUS

New DULON Covers

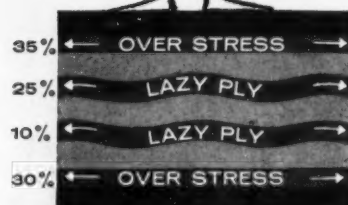
PROLONG BELT LIFE!

BBC - Balanced Belt Construction — is BOSTON'S exclusive manufacturing method that equalizes ply stress so that each ply pulls its full share of the load . . . eliminates lazy plies.

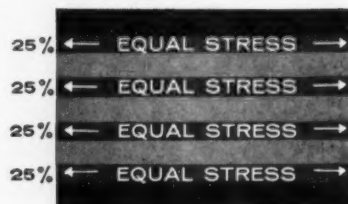
This is the result of two advanced BOSTON processes; *Electro-Tensile Control*, which controls ply tension — and *Rotocure*, the only continuous method of vulcanization which assures uniformity throughout the belt.

New DULON Covers add further uniformity and durability to BOSTON belts. With DULON, the consistency of belt performance has been greatly increased. DULON has proven, on the job, that it is amazingly resistant to abrasion, gouging and tearing.

Let the BOSTON man present the dramatic proof about Balanced Belt Construction with DULON Covers — as it applies to your specific belt problems.



CONVENTIONAL BELT CONSTRUCTION



BBC-BALANCED BELT CONSTRUCTION

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BOSTON WOVEN HOSE & RUBBER COMPANY
DIV. OF AMERICAN BILTRITE RUBBER CO., INC.
BOSTON 3, MASS.



INDUSTRIAL HOSE



BELTING



V-BELTS



PACKING



MATTING



TAPE

other advantage. Some added rolling resistance occurs when tires are hydroflated because of the increase in weight. But the solution counterbalances itself when the tire is only 75% filled so the increase in rolling resistance is only a small percentage of the increase in rimpull, and little power is lost on the haul.

Although plain water—fed into the tire by a garden hose through a special valve adaptor—can be used as ballast, most manufacturers recommend that calcium chloride be added to the solution. Calcium chloride is a must in cold weather because it prevents water from freezing in the tire (5 lb of calcium chloride per gal of water will prevent freezing at -55 deg).

Sp. Gravity at 62°F	Lbs CaCl ₂ per gal. water	Freezes Below °F
1.000	0.0	+32
1.050	0.7	+21
1.100	1.5	+ 7
1.150	2.3	- 10
1.218	3.5	- 30
1.250	4.2	- 42

The above Table shows the protection against freezing afforded by varying the amounts of calcium chloride solutions, and the specific gravities which may be read on a standard battery hydrometer.

But calcium chloride is a valuable additive even when freezing temperatures are not a threat. It provides additional weight that is far out of proportion to its volume. For example, a 24:00-29 tire filled to 75% of capacity with plain water increases in weight by 1,588 lb; the same tire filled to 75% capacity with a solution of 5 lb of calcium chloride to each gal of water increases in weight by 2,032 lb.

Calcium chloride will not damage rubber, but it can affect the bond between metal and rubber parts, and it also might corrode the rims of wheels using tubeless tires. Tubes that are hydroflated should be equipped with sealed valves that prevent the rubber valve base from separating from the valve metal.

Rim corrosion is not a serious problem for tubeless tires, but for extra protection rims can be coated with Rustoleum or a sim-

ilar lubricant. The Tusco Corp. of North Chicago, Ill., markets a corrosion-resistant additive that goes directly into the water supply before it is pumped into the tire. Called Rim-Saver, it comes packed in small foil envelopes. Each envelope provides excellent protection for 40 gal of solution.

The calcium chloride-water solution generally is mixed in a 50-gal drum. Calcium chloride is a safe additive if two things are kept in mind:

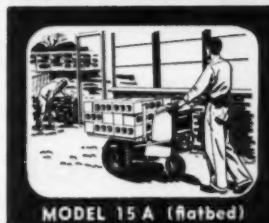
1. Calcium chloride and water produce heat when mixed. If water is poured on calcium chloride it will boil and splatter. **Therefore, always add calcium chloride to water; never add water to calcium chloride.**

2. Manufacturers' recommendations as to the quantity of calcium chloride to be used vary from from a minimum of 3 lb per gal of water to a maximum of 5 lb per gal. Calcium chloride raises

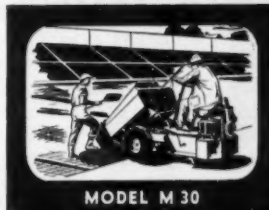
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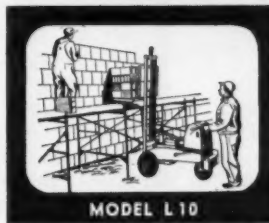
MODEL 15 A (bucket)



MODEL 15 A (flatbed)



MODEL M 30



MODEL L 10

PRIME-MOVERS OPERATE PROFITABLY ON MORE JOBS

than any other powered buggy. Outside or under roof, Model 15A PRIME-MOVERS put your materials where you want them. Little or no preparation required as these units use same runways, ramps or hoists you now have. Triple output of labor with same manpower. Regardless of the stage of your job, you can show immediate profit in placing concrete, brick or tile with PRIME-MOVERS.

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PRIME-MOVER CO., Muscatine, Iowa

Please send job reports, estimating data and literature on PRIME-MOVER equipment for:

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BRICK HANDLING ☐; Model _____

Name _____

Company _____

Address _____



*Job: remove 1,000,000 cobblestones
plus 30,000 square feet of concrete*

Loading costs threaten profits until N.Y. firm buys this 2 $\frac{3}{4}$ yd Michigan

Due to extremely rigid job specifications and unusually tough material, Triboro Asphalt Company, Flushing, New York, faced a substantial loading problem in stripping 31 blocks of six-lane Third Avenue in Manhattan. Recognizing the advantages of a single machine with speed and power to keep costs from getting out of hand, they asked NYC distributor United Tractor & Equipment Corporation to demonstrate a 2 $\frac{3}{4}$ yd Michigan Tractor Shovel. When they saw, they bought!

Replaces big crawler

The 24 mph Michigan replaced a 3 yard crawler loader. "The crawler was too slow . . . too often blocking traffic . . . and it couldn't get big enough loads to maintain the desired production pace," according to Supt James Magnotta. Smaller crawlers, attempting to load heavy granite-slab

cobblestones, tore out final drives and ended up in the shop. Two big rubber-tire loaders, which had a crack at the job, were sent back to the yard. "They didn't have either the power or the traction needed," said Supt Magnotta.

Does job in 27 days

So the Michigan, working alone, piled and truck-loaded *all the cobblestones*. Over a million of them were handled, according to engineers. Each measured about 8 x 12 inches, weighed about 15 lbs. Individual bucket loads averaged 250 blocks each . . . 3,750 lbs. *The entire job was done in 27 eight-hour days . . . far faster than other stripping contractors doing the same kind of work with power shovels and crawler-loaders elsewhere along Third Avenue.* "Far better too," adds Magnotta. "Our Michigan left the sub-base clean after only one pass. Sensitive controls let the operator

(Advertisement)



Six-inch concrete slab breaks quickly as Michigan applies its tremendous breakout action. Fast work by the Michigan made job much safer for maintenance of normal highway traffic.

keep just enough down-pressure on the bucket. All we had to do before laying asphalt was fill and level a few spots."

Breaks out concrete

After several days, the Michigan operator became so enthusiastic about the power of his machine, the street foreman tried to tame him down. He gave orders to break out and load some concrete pipe-vault roofs. Even this tough problem had a simple solution. By working bucket edge under the vault and using Michigan's terrific breakout, operator easily broke it loose. Concrete patches and driveway extensions, some 15 to 50 square feet, proved just as easy. "I put in some terrific days—running around the job like a pickup truck," says the operator, Fred Cerbone . . . "did a tremendous amount of work—yet I was *less tired* at the end of a day than on anything else I've operated in my 25 years with Triboro."

How to cut costs

Triboro's Michigan did more than boost operator satisfaction. It helped cut many dollars of expense from the multi-thousand dollar paving project! As every contractor knows, bidding is extremely competitive on this kind of job; by handling loading and clean-up efficiently, the Michigan kept these expense items from eating profits.

With Clark torque converter, power-shift transmission, power steer, and planetary-wheel axles standard on all models, Michigans deliver more usable power, traction, and speed than any other machines of their type. If you're willing to be convinced Michigan is in a class by itself, do what Triboro did: ask for a demonstration. You name the job!



Single Michigan pass leaves sub-base clean, smooth, ready for repaving. Note how unobstructed bucket-arm design preserves dumping clearance.

Michigan is a registered trade-mark of

**CLARK®
EQUIPMENT**

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road
Benton Harbor 44, Michigan
In Canada: Canadian Clark, Ltd.
St. Thomas, Ontario

the temperature of the mix considerably. As the temperature rises, it is possible to dissolve more than 5 lb of calcium chloride per gal of water. But when the mixture cools after it is pumped into a tire, the excessive calcium chloride will crystallize. **Therefore, do not exceed the 5-lb-per-gal maximum limit.**

Special hydrometers are available for testing the strength of the mixture. Always wait until the solution cools before testing

it or transferring it to the tire.

After the solution is mixed, the next step is to jack up the wheel and rotate the tire until the valve stem is at the top and perpendicular to the ground. Install a rim nut or conical cap on the valve to prevent the stem from slipping inside the rim. Then remove the valve core and allow the air pressure to escape.

Special air-water adaptors that replace the air valve core are needed to connect the valve and

the water line. The best types are those with bleeder valves that allow air in the tire to escape as water is pumped in. A. Schrader's Son, Brooklyn, N. Y., is a leading producer of these valve adaptors.

The simplest, though by far the slowest, method of transferring solution to a tire is to place the solution tank on an elevated platform and siphon the liquid from the tank into the tire through a hose connected to the valve adaptor.

Powered Pumps Are Best

But especially when the recommended calcium chloride-water mixture is used to liquid-fill tires, the job can be handled much more quickly and accurately by electric, gasoline, or air-powered pumps. The Tuxco Corp. offers a line of compact, portable units especially designed for hydroflating tires. Two of their units that are particularly suited for hydroflating construction tires are the 500-gph model T-8000A, an electrically powered unit weighing only 37 lb; and the 600-gph model K-4000A, a gasoline-engine-powered pump that weighs 49 lb. Both pumps have lightweight aluminum housing that make them easily portable. Both come with hoses, strainers, pressure gages, and quick couplers.

A good rule-of-thumb for determining when the tire contains the right amount of solution is to fill it to the level of the valve stem, which should be pointing down at the ground. This level will generally be 75% of the tire's internal volume.

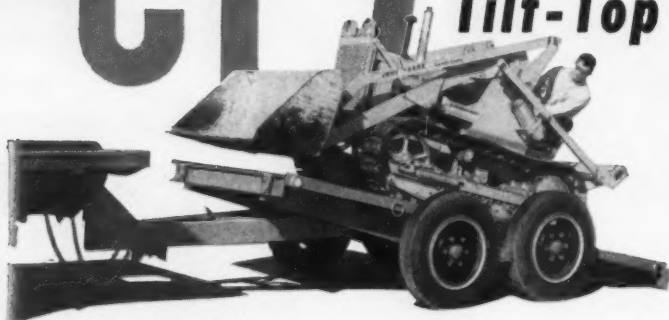
If the valve adaptor has a built-in release valve, the water level can be checked easily. If the adaptor does not have a release valve, remove the adaptor and rotate the tire from side to side to remove the extra solution.

When the desired liquid level is reached, remove the coupling and replace the valve core, but leave the rim nut in place. Inflate the tire with air until it is about 10 lb over the manufacturer's recommendation, and then reduce the pressure until it is 3 or 4 lb above the manufacturer's recommendation.

After a few days recheck the tire pressure. It should have gone down to normal. If it has not, reduce the pressure accordingly.

continued on page 232

NEW CT-7 ton tandem axle MILLER Tilt-Top



loads 'em low...loads 'em in less than 2 minutes!



• WALKS OVER THE ROUGHEST TERRAIN

Rugged box section walking beams oscillate freely on either side... permit wheels to "walk" over the rough spots for less jarring and a more level ride. Deep race, precision ball bearings on walking beam shaft, Timken rollers on wheel spindles, assure positive alignment—eliminate freeze-up downtime.



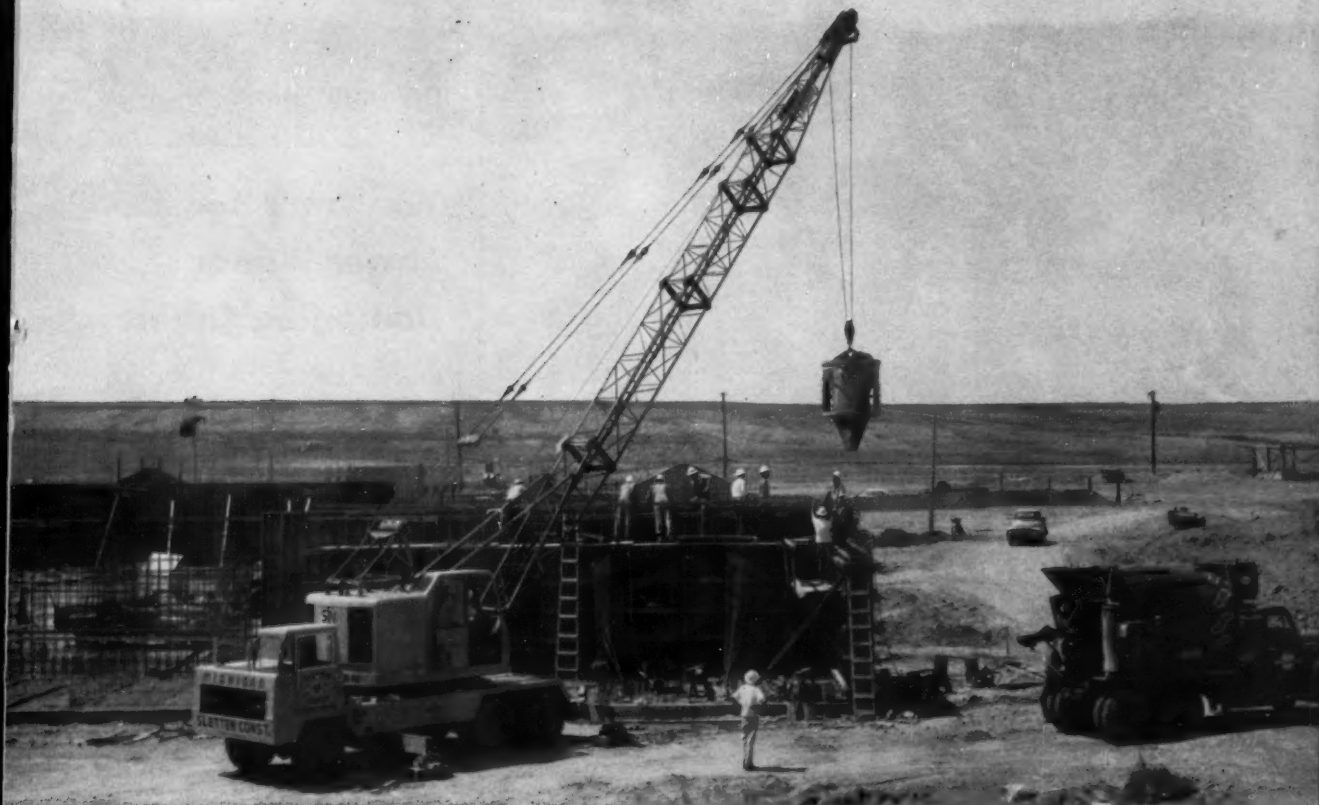
Here at last, is a "Tilt-Top" built to handle a wide variety of medium weight rigs... on tandem axle wheel suspension! Platform is "cradled" between the wheels for low overall height and an extra low climb angle that makes drive-on loading—for even such limited traction rigs as rollers—a TWO minute, ONE man operation. And, for easy backing, quick spotting maneuverability and straight line trailing... you can't beat this "pavement hugger". Built with the usual Miller huskiness, it's equipped with: • traction sure, 2 inch oak decking • heavily braced frame • adjustable pintle eye hitch, and • four, first line tires. Two way hydraulic tilt control and electric brakes are available as optional equipment. Can be ordered with either 14' or 16' long platform. See this fast loading new Tilt-Top at your MILLER distributor's today — you'll be surprised how ruggedly it's built — how modest its cost!

See your MILLER distributor or write for FREE literature to:

MODEL "CT"-7 ton \$1255.00*
F.O.B. Milwaukee, Wisconsin
Complete with platform and tires.
Brakes and optional equipment extra.
*Plus 10% Federal Tax

Miller®
Tilt-Top Trailer Inc.

457-E S. 92nd Street, Milwaukee 14, Wisconsin



25 ton truck crane pours concrete at 75 ft radius

This 25 ton Michigan Truck Crane, with 1 yd bucket and 95 ft of boom, has poured footings at a 75 ft radius.

Equipped with half-yard clam and 70 ft boom, it has wrecked masonry structures.

On the job shown, at Malmstrom Air Base, Great Falls, Montana, it handled structural steel, wood form placement, and concrete pouring for four big ammunition storage buildings. Concrete vol-

ume for the buildings and 14 end walls totalled 4,200 cu yds. Pour rate on the \$897,000 contract averaged 18 to 20 one-yard buckets per hour.

Takes only minutes to prepare for highway travel

The Michigan's owner, Sletten Construction Company, Great Falls, use their rig for all sorts of crane operations. "We like its speed on the job (and between jobs)," says Glenn Carpenter, company v.p. "For highway travel, we have only to shorten the boom to get going." Typical 5 to 6 mile trips through Great Falls usually require only 20 to 30 minutes. A longer move, 120 miles, was completed in under 4 hours.

"Good sales-service sold us on Michigan"

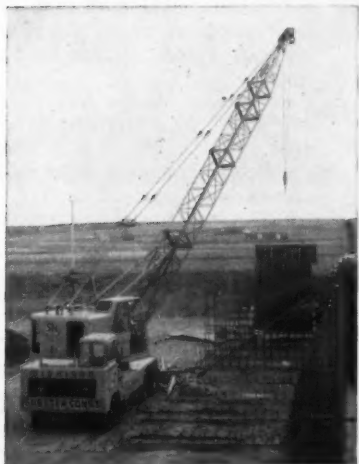
"We bought the Michigan," continues Mr. Carpenter, "because, like all Michigan Distributor salesmen we know, our present representative worked right with us and helped us determine just what we needed. We've been pleased, too, with the service we've had from Miller Machinery Co., our Michigan Distributor. And some of those standard Michigan features can't be beat—like power up and

power down on both boom and hoist line."

In 9 months, no loss of working time

"Efficiency is tops too," says Supt. Ben Liebelt. "In 9 months (1,500 work hours), we've had no mechanical troubles, never had to cancel scheduled work. We've gotten more work done in these hours, also, because of Michigan's dual control. It enables our operator to drive away with a moderate load on the boom without leaving the crane cab."

Ask your Michigan Distributor to show you how Michigan dual controls, speed, and efficiency could help brighten your profit picture. There's a model to fit your needs: 10, 15, 25 tons.



Easy-handling positive crane controls speed removal of forms after concrete has hardened.

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you

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for

100

fastenings!"



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RAMSET makes better fasteners than anyone else... they Austemper them to make them both hard and tough! And RAMSET replaces any ineffective fasteners free; they guarantee 100 good fastenings out of 100 tries.

If a fastener fails, there must be a material reason; and the man from RAMSET will be out in a hurry to make it good.

You'll be wise to use RAMSET's powder-actuated system for all fastenings to concrete and steel... ask your dealer, or write us today.



Ramset Fastening System

WINCHESTER-WESTERN DIVISION
OLIN MATHIESON CHEMICAL CORPORATION

12103-E Berea Road

Cleveland 11, Ohio

THE MAINTENANCE SHOP... continued

You Can't Boost Power Without Damaging Engine

THE TEMPTATION to tinker with a diesel engine in order to milk out a few extra horsepower is always great, but it can't be done without exposing an engine to serious damage, warns the Cummins Engine Co.

A few years ago the excessive exhaust smoke that appeared when an engine was over-fueled generally was enough to keep mechanics from trying to take more horsepower from an engine than it was designed to deliver. But since the advent of turbochargers some mechanics are likely to think they have successfully boosted horsepower output without paying a penalty. The facts are that over-fueling also damages a turbocharged engine, even though the action of the turbocharger eliminates excessive exhaust smoke.

Over-fueling is usually accomplished by intentionally raising the fuel rate of an engine over the manufacturer's recommendations; or by creating an unbalanced air-fuel ratio by failing to maintain the engine air system.

What Can Happen

A listing of the failures that can result from constant over-fueling of a high-speed diesel engine—whether it is turbocharged or not—should be enough to make any mechanic think twice before he attempts to drain extra power from it. These failures can include:

- Cracked pistons and excessive piston ring and ring groove wear.
- Scored cylinder liners and burned head gaskets.
- Warped, burned or cracked valves, turbocharger housings, and exhaust manifolds.
- Crankshaft failure caused by damage to vibration dampers.

In addition to the above, tests show that oil consumption rises considerably when an engine is constantly over-fueled. The fact that an engine is burning excessive amounts of oil is reason enough to stop over-fueling.



Two-pass 99 to 104% compaction reported by users of the new MICHIGAN **DOZER-COMPACTOR**

From road jobs all over the country comes cost-cutting compaction news . . .

Michigan Model 180 Tractor Dozers, their tires interchanged for steel compaction wheels, are completing tamping assignments *twice as fast*, on the average, as crawler-drawn sheepsfoot rollers.

Many of these new Michigan Compactors have regularly achieved 99 to 104% compaction in only two passes.

They have done an excellent job spreading fill as they compacted.

They have worked close to bridge abutments to eliminate most hand-tamping.

And, when compacting has been completed, they have converted readily to high-speed rubber-tired dozing units.

"Best compactor" on big Ohio job

Miller Excavating Co., Suffield, Ohio, is using one of these new 162 hp Michigan Dozer-Compactors on their 3,200,000 yd, 14 mile freeway section west of Akron. State engineers report "99 to 104% compaction consistently being obtained here in two passes of the Michigan." Record

better results previously obtained with both large wobble-wheel and steel-drum rollers.

Outworks sheepsfoot on Illinois Tollway

Another steel-wheeled Michigan worked against a crawler-drawn, water-ballasted sheepsfoot on a section of the Illinois Toll Road near Huntley. On a typical fill here, the sheepsfoot needed six passes to compact a silt-clay-sand mixture to the required 95%. Michigan in the same material needed *only two passes* to achieve 100.5% modified Proctor. Whatever advantage the sheepsfoot had in wider cover per pass was more than made up by Michigan's greater speed and greater compression per lineal inch of roll face (810 lbs). Michigan averaged 3 to 5.3 mph, the crawler, 2 to 2.6 mph.

96.5% on two passes vs. 95% on six passes

On another fill, same job, the Michigan consistently developed 96.5% compaction in *two passes*. A multi-drum sheepsfoot needed *six passes* in the same soil to exceed the required 95%. Scraper lifts averaged 8 inches in both cases; material

was mostly clay with some sand and occasional rocks up to 5" diameter. In another typical fill—Type A gravel with small amount of binder and 5% moisture—a Michigan took only three passes to develop 102.6% compaction.

Other on-the-job tests show similar excellent results . . . *in most materials*. To be honest, experience has uncovered *some* conditions where the new Michigan should not be used. *Your* compaction requirements can easily be analyzed, though, to see if the new Michigan system will improve *your* efficiency. Your local Michigan Distributor is the man to see. Call him before you plan your next bid. No cost to you, and no obligation.

Michigan is a registered trade-mark of
CLARK EQUIPMENT COMPANY
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An advertising inch is measured $\frac{1}{8}$ " vertically on one column, 3 columns—30 inches—to a page.

Send New Advertisements and Inquiries to Classified Adv. Div. CONSTRUCTION METHODS & EQUIPMENT, P. O. Box 12, N. Y. 6, N. Y. June issue closes May 29th

\$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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Box Numbers—count as one line.

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**LOW COST—DEPENDABLE
INDUSTRIAL RUBBER PRODUCTS**

call **CARLYLE**

FOR ALL YOUR REQUIREMENTS OF
RUBBER HOSE

Air
Acid
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Welding
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Discharge
Fire
Fuel Oil
Oil Suction
& Discharge
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Conveyor Grader Hot Material V-Belts
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QUALITY
PRODUCTS

FOR SALE

JOHNSON CONCRETE PLANT

150 ton aggregate, 1250 bbl. cement, all Scales & Motors, $\frac{3}{4}$ yd. Batcher, 24" x 240 ft. long Conveyor, 30" x 160 ft. Conveyor, all new 1955. \$27,500. Located Philadelphia. Dismantled ready to load on truck.

WIVCHAR READY MIX CORP.
RIVERHEAD, NEW YORK Phone Park 7-4177

WANTED TO BUY

34E SINGLE DRUM PAVER equipped with a high lift boom. Must be in good condition and located in Texas, Louisiana, Arkansas or Oklahoma. Write giving age, description and price.

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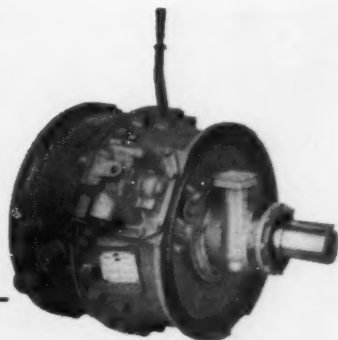
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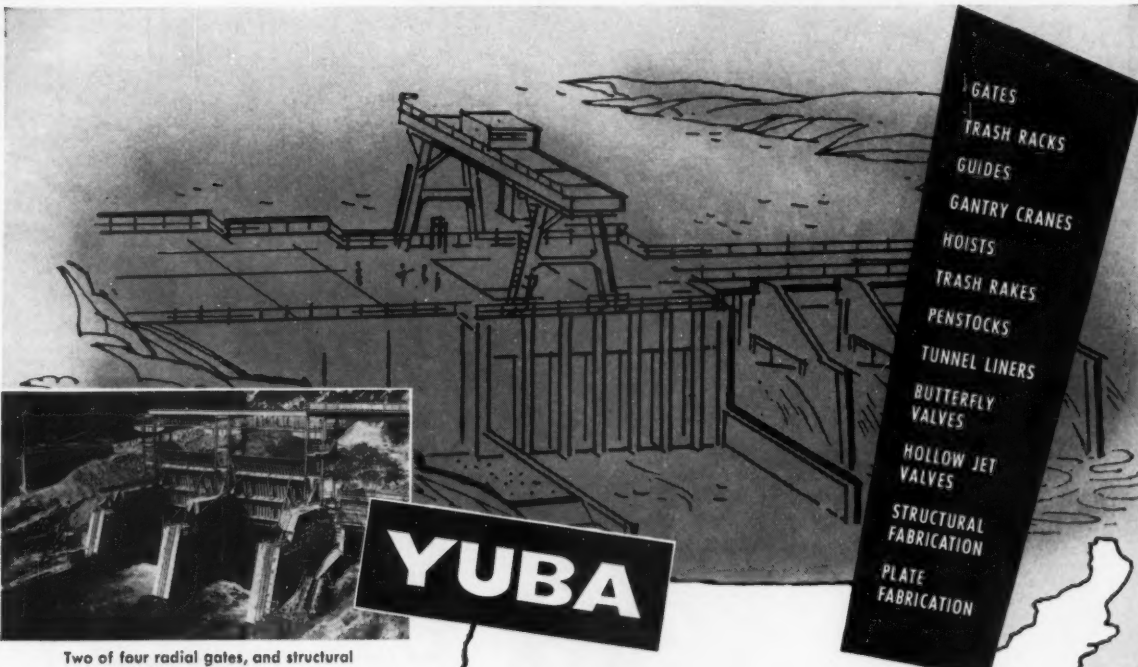
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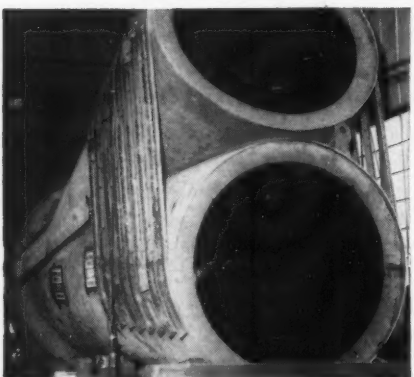




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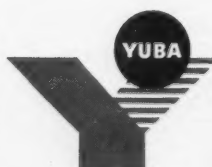
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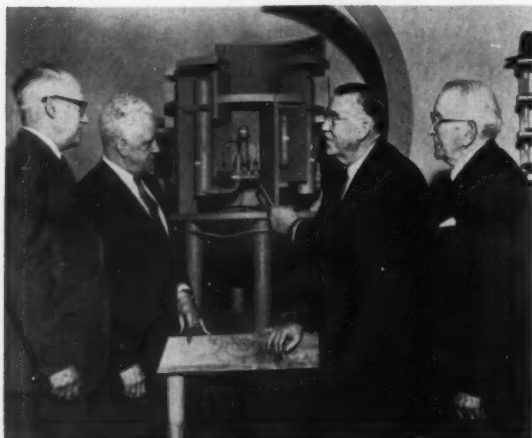
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Methods Memo . . .



A Briefing for Labor

H. N. McCampbell, vice president and construction manager of Stone & Webster Engineering Corp., explains construction details of an atomic power plant project to union leaders at a pre-job conference.

Top national and regional officials of 14 building trades unions met with company officials to discuss in advance the labor-management problems that may arise during construction of the \$57-million Yankee Atomic Power Reactor at Rowe, Mass.

The contractor presented a month-by-month schedule showing when ironworkers, carpenters, electricians, pipefitters, teamsters, and other crafts would be needed. Company officials urged the labor leaders to work out jurisdictional problems before the job starts to the fullest extent possible.

Safety planning got a lot of attention. Stone & Webster officials said they would expect workers to cooperate in the accident prevention program. Roaming safety patrols will tour the job to spot dangerous conditions and enforce safety regulations.

In the photo are (left to right) John J. Regan, vice president of the Electricians Union; Stephen J. Angleton, representative of the Painter Union; McCampbell; and W. M. Welch, vice president of the Operating Engineers Union.

Gas Turbine Tractor

Allis-Chalmers is conducting experiments with what the company says "may be the crawler tractor of the future."

The rig looks like a standard HD-21. The big difference is that it is powered by a Boeing high speed gas turbine engine instead of the usual diesel.

Allis-Chalmers says the turbine develops a net horsepower about equal to that of a comparable diesel. Noise level also is about the same although the pitch and character of the sound is entirely different.

A primary purpose of the experiments is to test the ability of the turbine to deliver the range of speed and flexibility of power required for tractor operation.

Rare Restraint

One Chicago building trades union has decided not to ask for a pay boost this year even though several other crafts in the area have negotiated wage increases of up to 20¢ an hour.

Irvin D. Friedman, president of Local 74 of the Wood, Wire & Metal Lathers, said the 1,200 members of the local would rather have continuous employment than a wage hike that would raise building costs at a time when new construction in Chicago is below peak levels. About 200 to 250 members of the local have been unemployed recently.

The new contract between the local and the Contractors' Association of Chicago provides for a re-opening of wage discussions in 1959 with no increase to go into effect, if negotiated, until June 1, 1959.

NLRB Grants Delay

Contractors and construction labor unions have until September 1 to work out hiring arrangements that conform with the Taft-Hartley Act's prohibition of the closed shop.

The National Labor Relations Board says it will allow a three-months period for unions and employers who have used hiring halls to adjust their hiring practices to the closed shop ban. NLRB granted the delay at the request of Richard J. Gray, president of the Building and Construction Trades Department, AFL-CIO.



Parade of Payloaders

"Payload Convoy West," a 10-mile-long parade of trucks carrying Payloader tractor-shovels, rolls toward Salt Lake City, Utah, for a two-day meeting of Frank G. Hough Co.'s distributors in 11 western states. The convoy began the long trip from the Hough plant in Libertyville, Ill. Aboard were almost 100 rubber-tired and crawler tractor-shovels worth more than \$1 million. The company says the Salt Lake City meeting is the first of several "Beat the Recession" programs.



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View of one section of assembly line.

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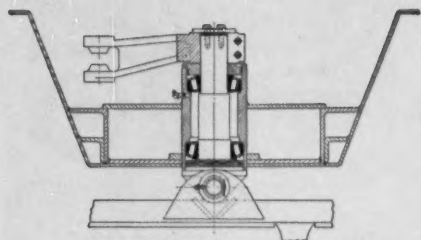
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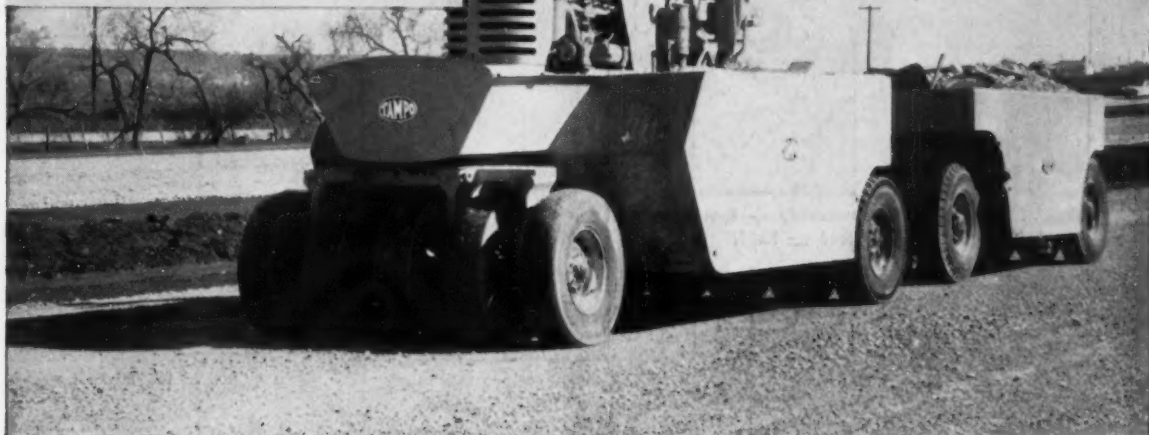
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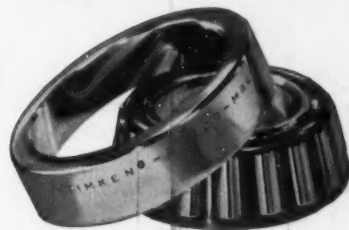
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